



Radial Cement Bond
Variable Density Log
W/Gamma Ray/CCL

Company	Noble Energy	
Well	Wells Ranch AE20-64-1HN	
Field	Wattenberg	
County	Weld	State
State	Colorado	Colorado
Location:	API # : 05-123-37213	
SEC 20 TWP 6N RGE 62W		Other Services
BHL: 1650' FSL & 535' FEL		TEMP
Permanent Datum	Ground Level	Elevation
Log Measured From	24' Kelly Bushing	4785'
Drilling Measured From	Kelly Bushing	Elevation
		K.B. 4809'
		D.F. 4808'
		G.L. 4785'
Date	November 27, 2013	
Run Number	1	
Depth Driller	10834'	
Depth Logger	6827'	
Bottom Logged Interval	6814'	
Top Log Interval	Surface	
Open Hole Size	8.125	
Type Fluid	Fresh Water	
Density / Viscosity	8.33	
Max. Recorded Temp.	212 Deg F	
Estimated Cement Top	780'	
Time Well Ready	13:10	
Time Logger on Bottom	14:01	
Equipment Number	13033	
Location	Brighton	
Recorded By	C. Rail	
Witnessed By	Bill Mansfield	
Borehole Record		
Run Number	Bit	From
One	To	Size
Two	Weight	From
Three	To	Bottom
Four	Size	Wgt/Ft
Casing Record	9 5/8	36#
Surface String	7	26#
Prot. String	4 1/2	11 6#
Production String		Surface
Liner		6829'
Short Joint		5559'

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Primary Log on Well. Well Logged using 24' KB.

Main Pass and Repeat Pass Logged with Zero Pressure on Surface

Estimated Top of Cement @ 780'

Short Joint @5559' to 5571'

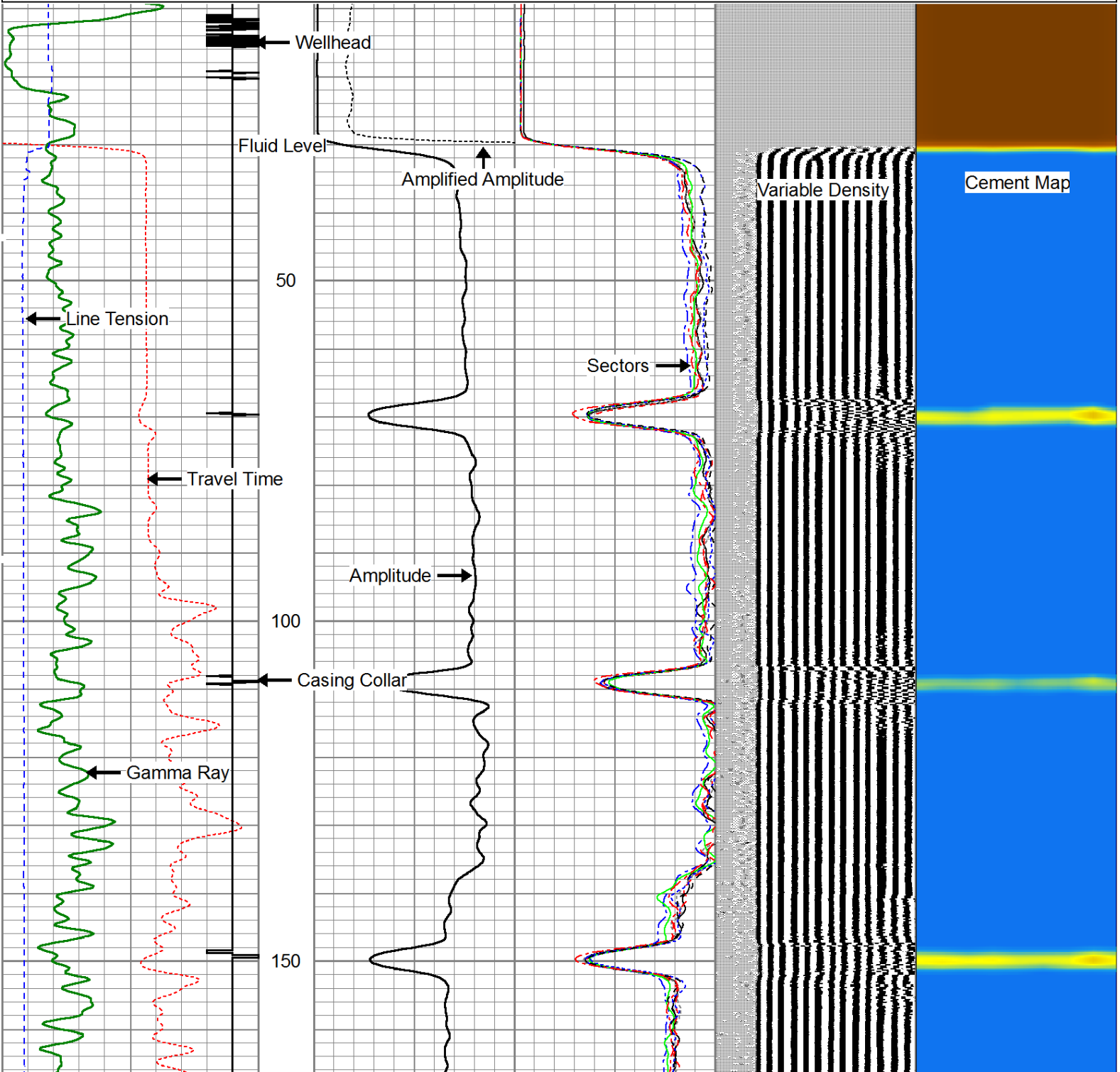
Thank you for using Allied Wireline.
(303)659-4609

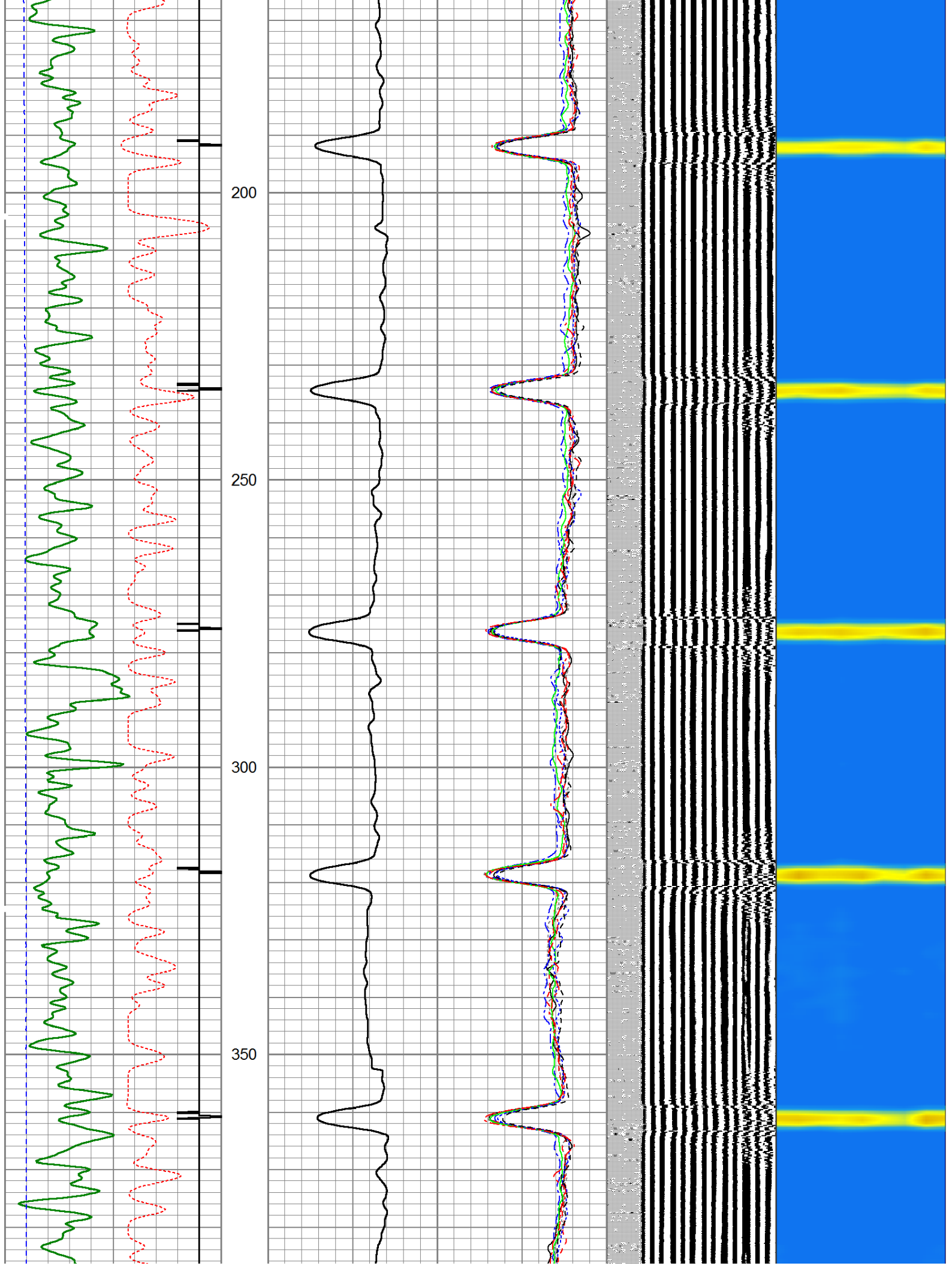


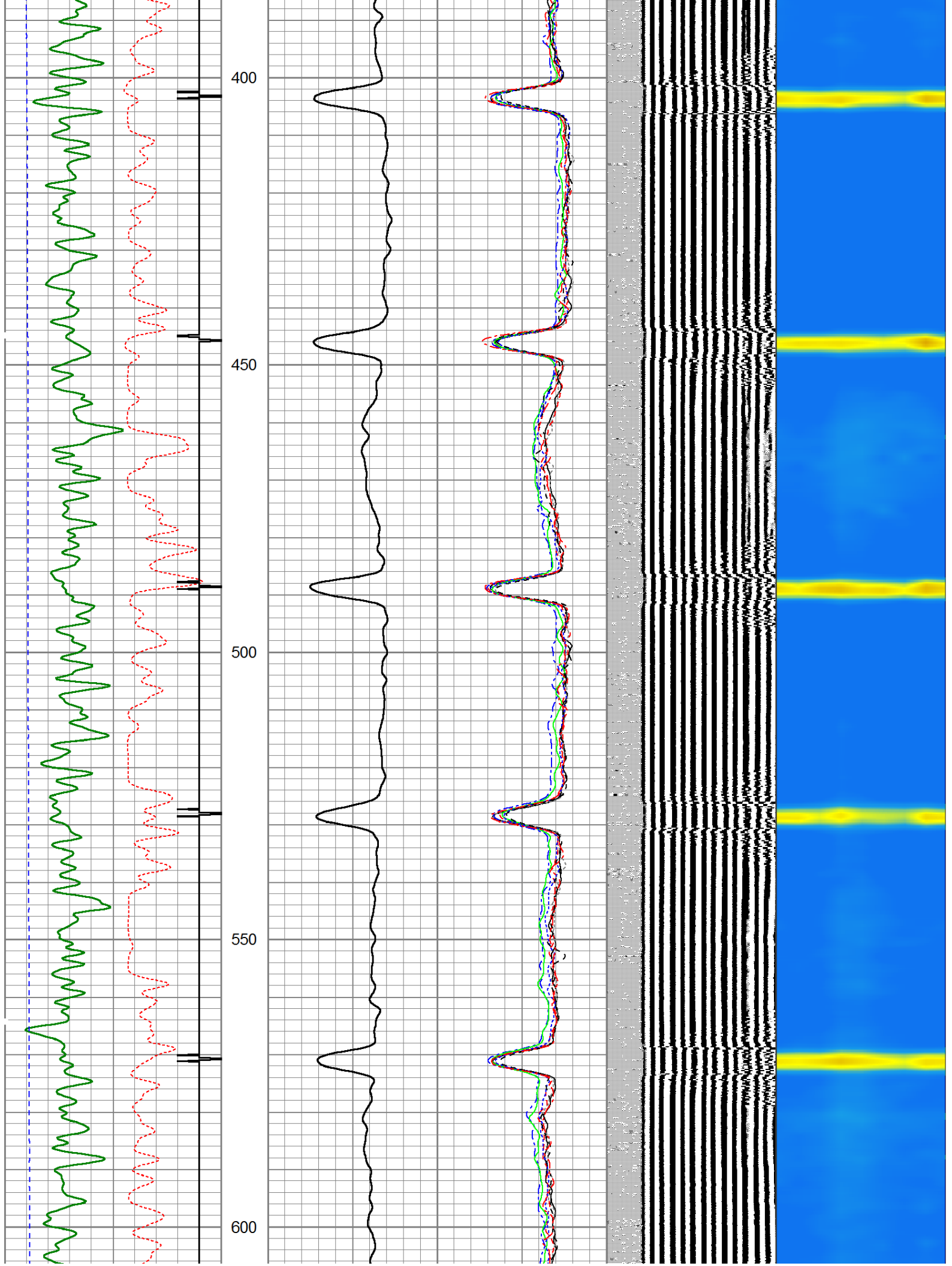
Main Pass (0 PSI)

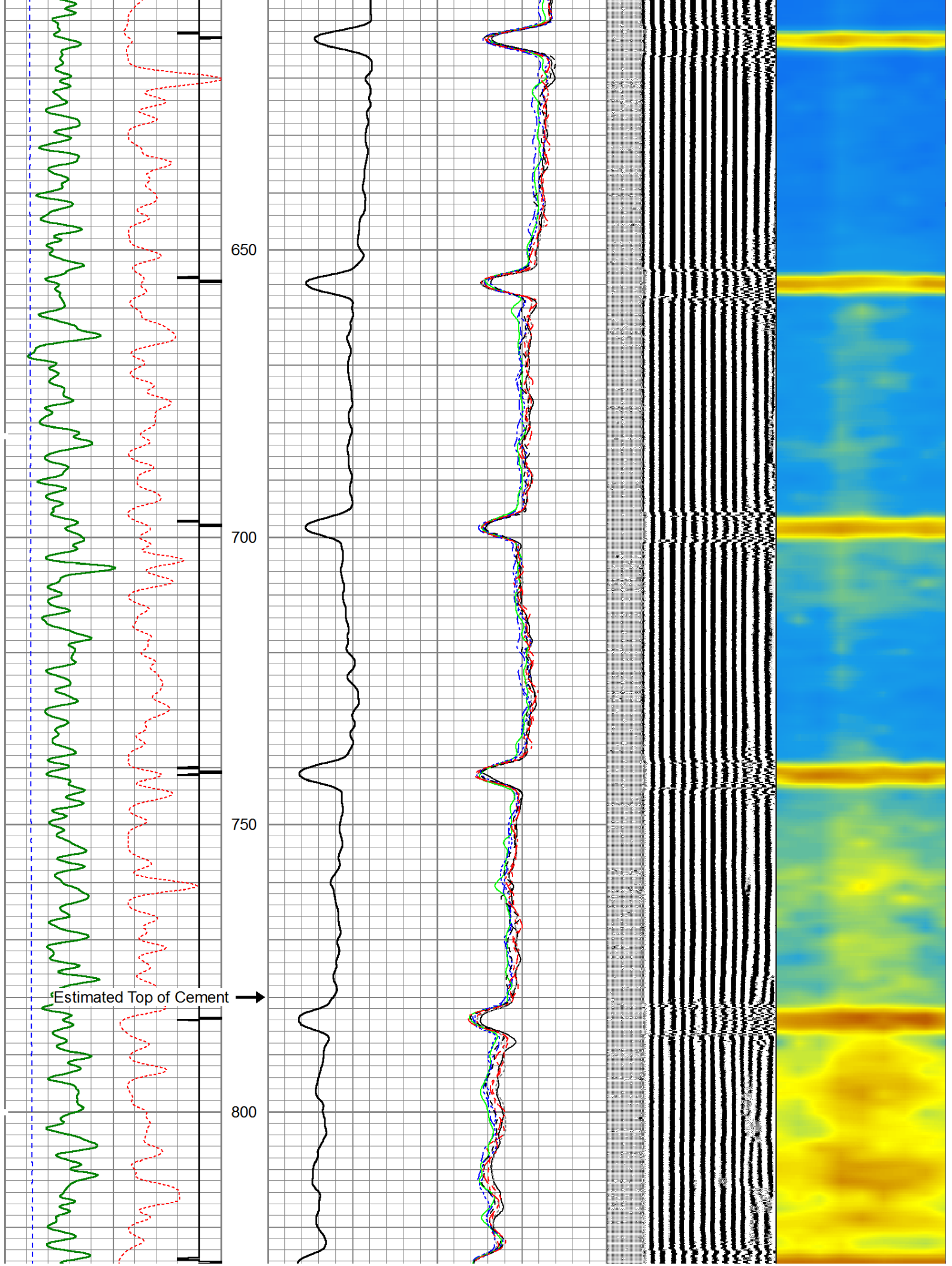
Database File: noble energy wells ranch ae20-64-1hn_rcbl.db
Dataset Pathname: pass5
Presentation Format: scbl03
Dataset Creation: Wed Nov 27 14:08:54 2013 by Log 0
Charted by: Depth in Feet scaled 1:240

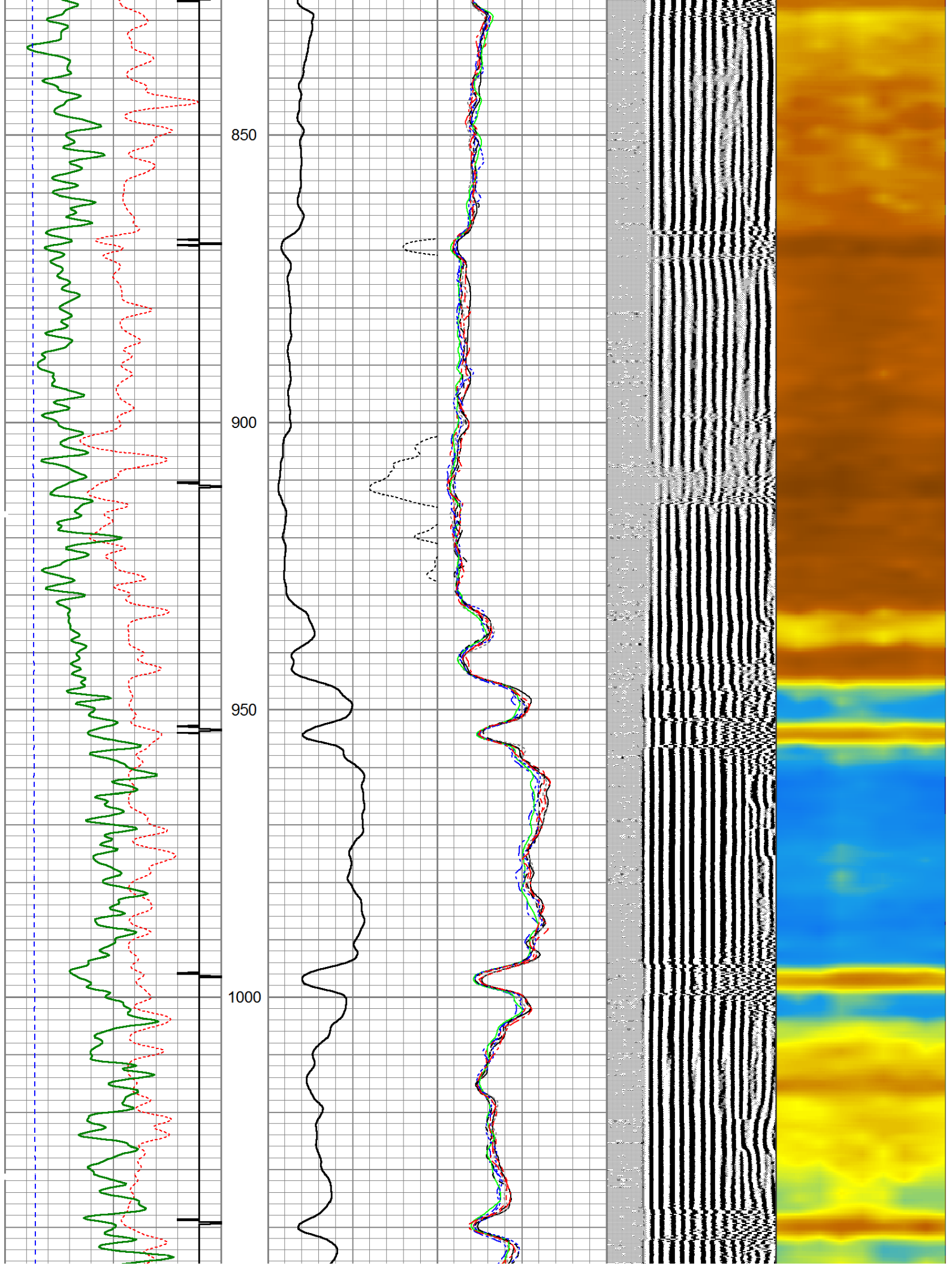
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	AMPS2	150	200	1200	0	100
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150				
0	Line Tension (lb)	2000				-5	AMPS4	150				
						-5	AMPS5	150				
						-5	AMPS6	150				
						-5	AMPS7	150				
						-5	AMPS8	150				

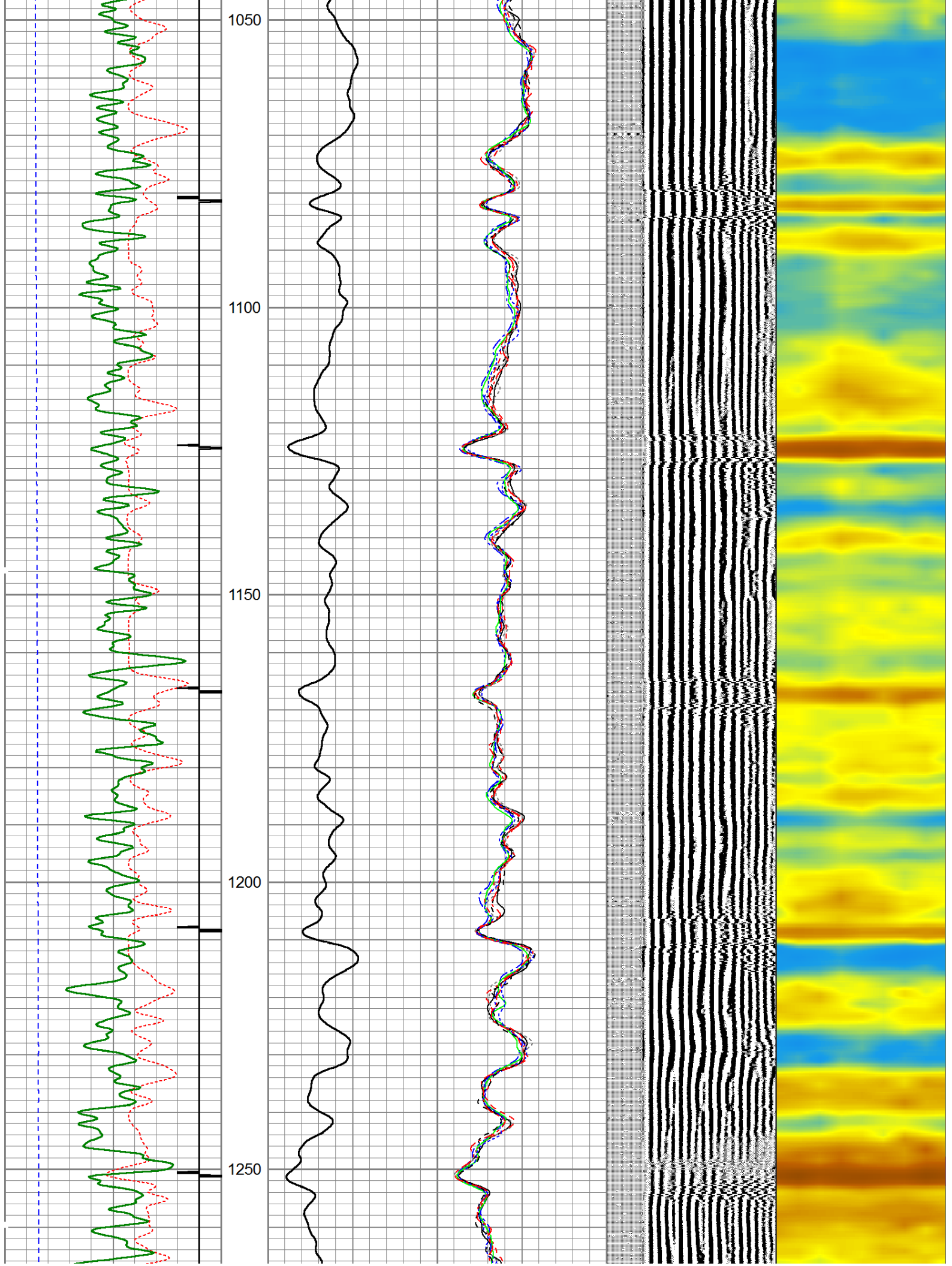


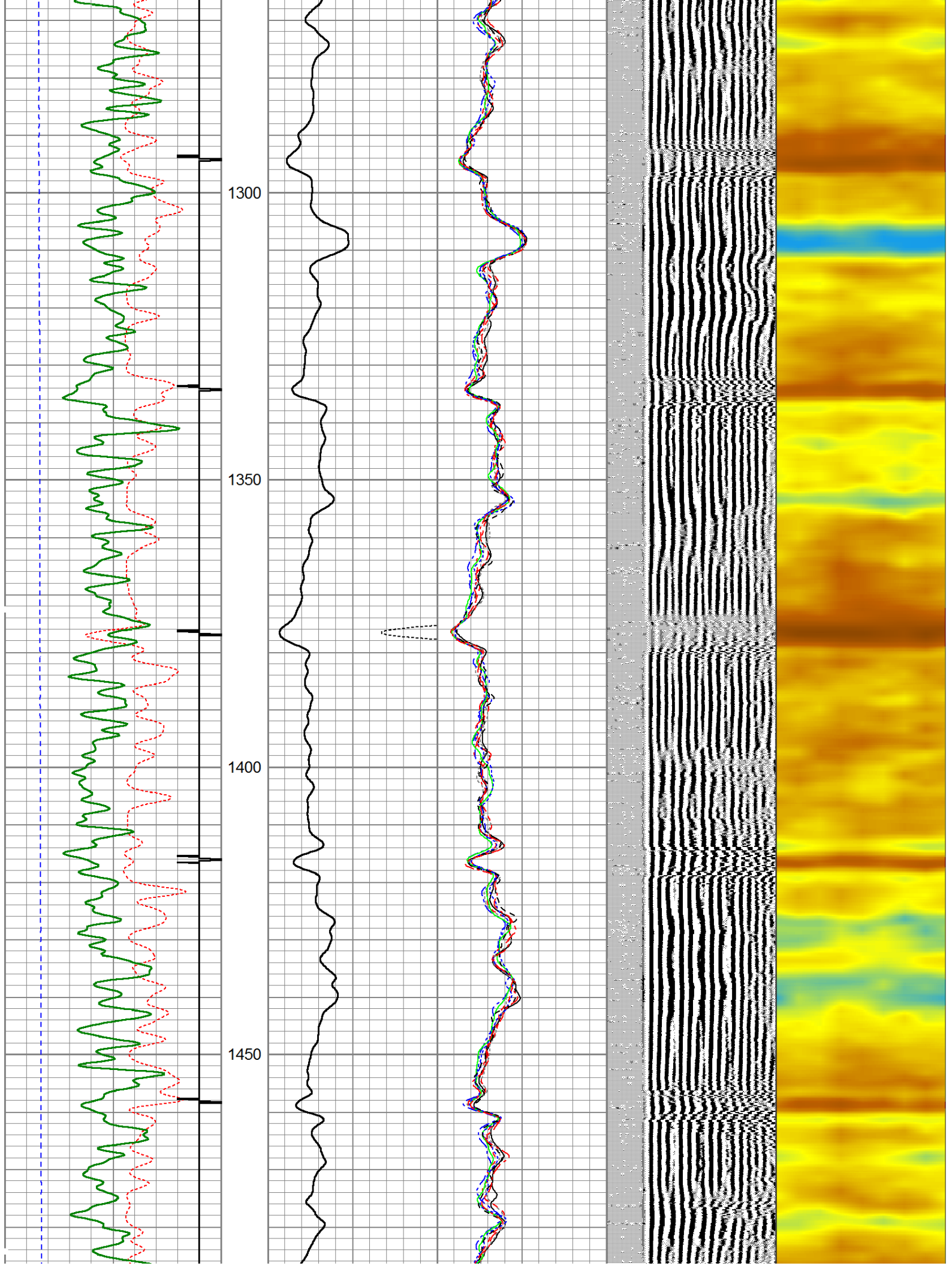


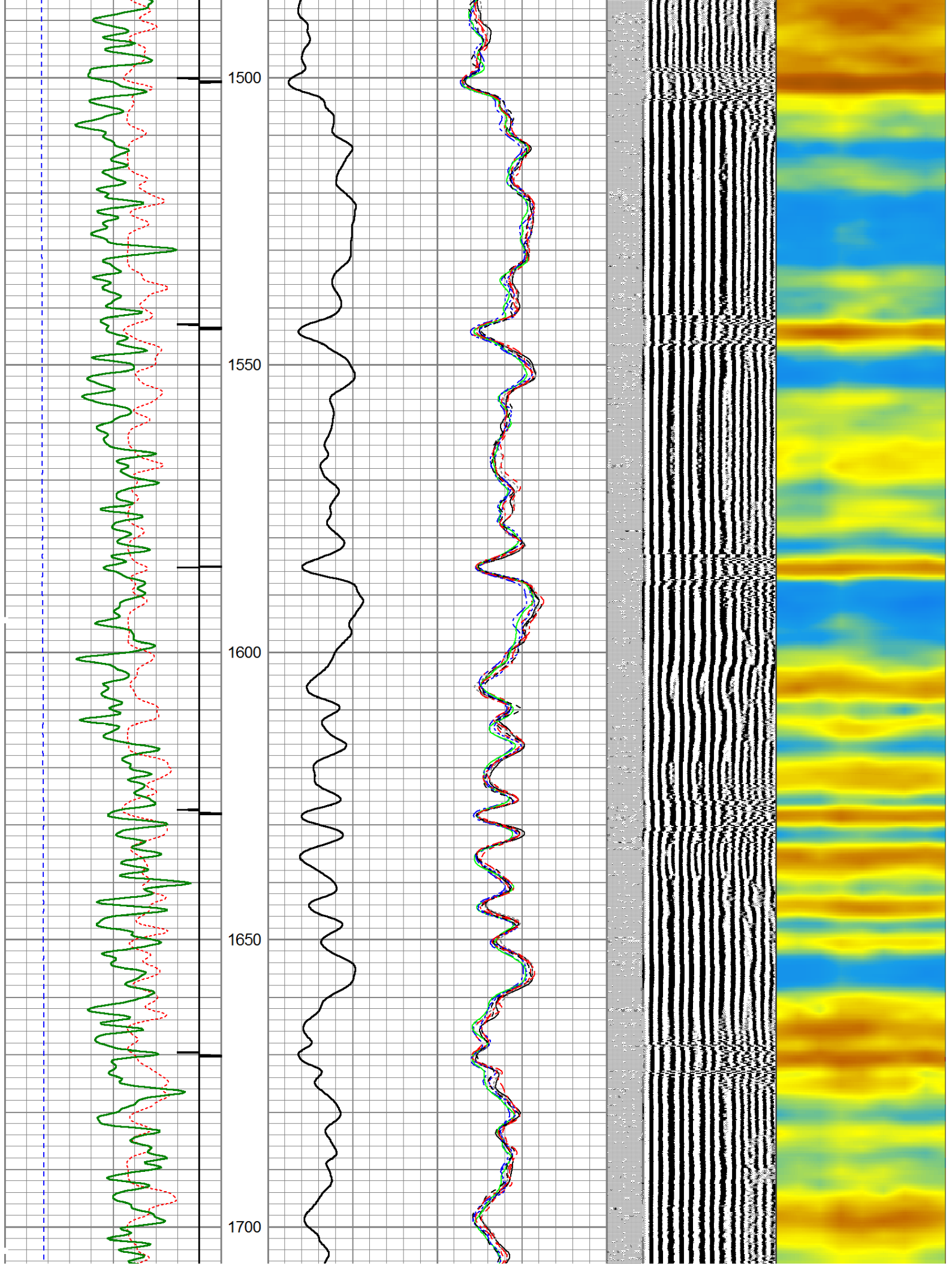


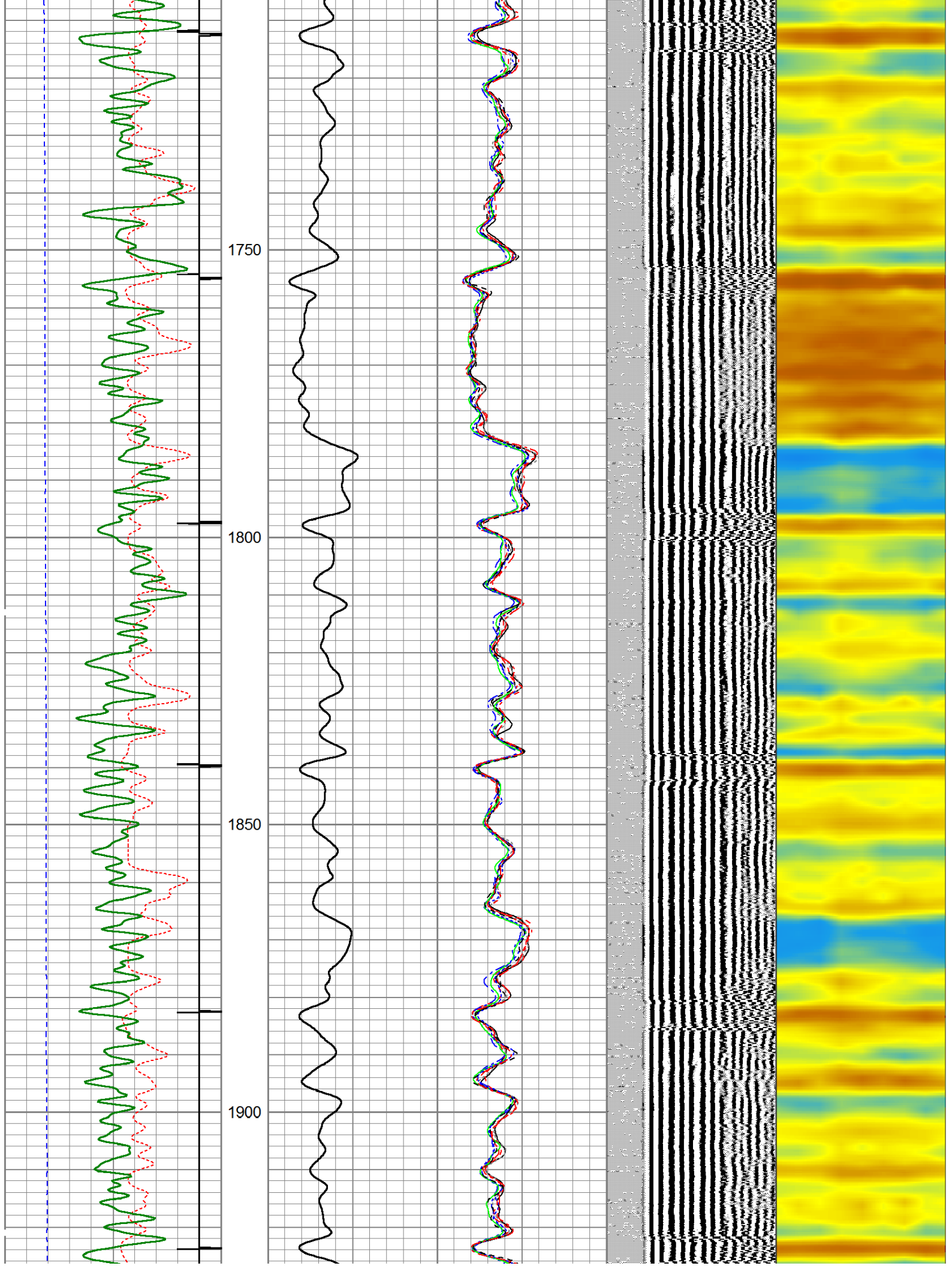


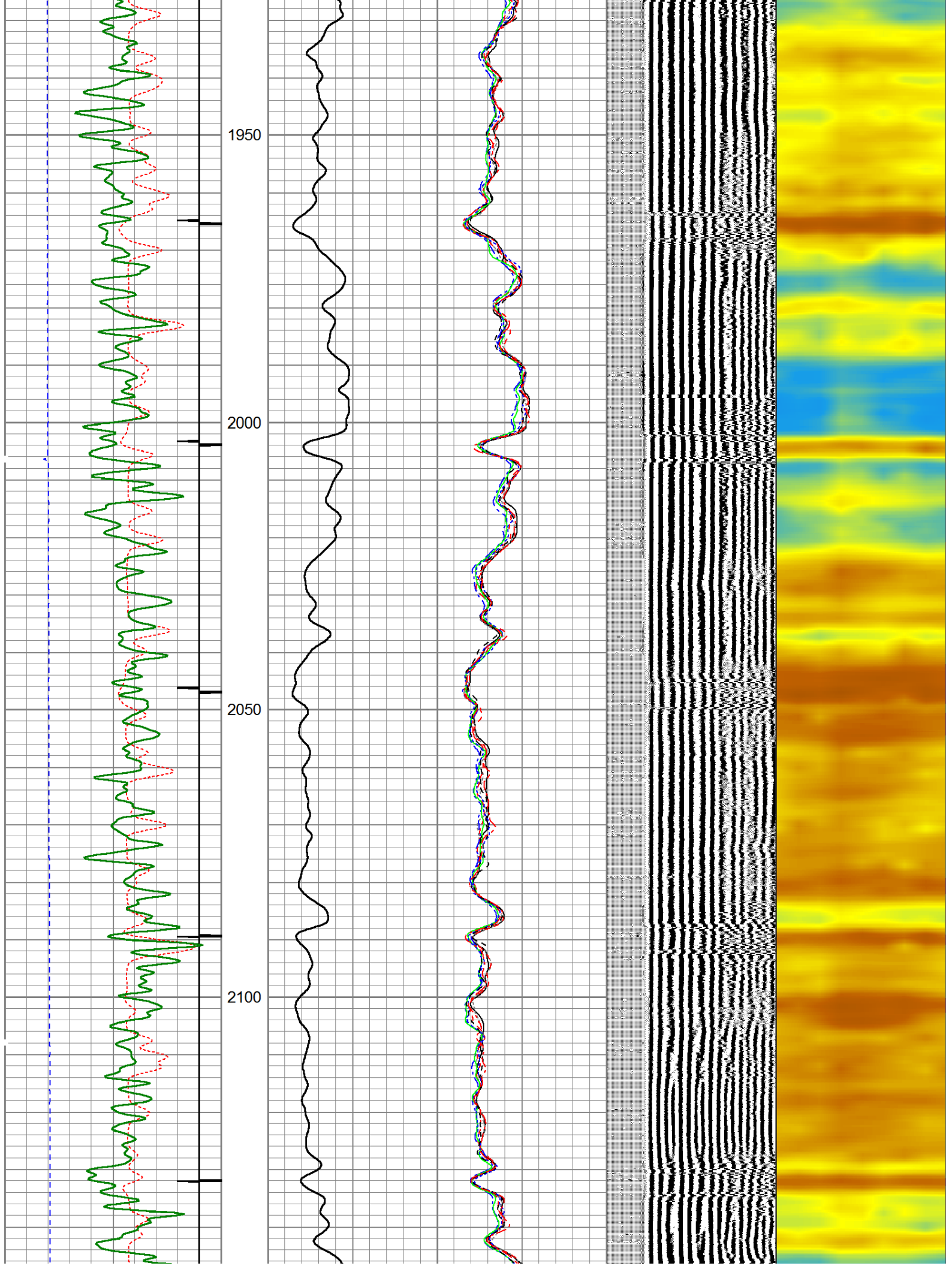


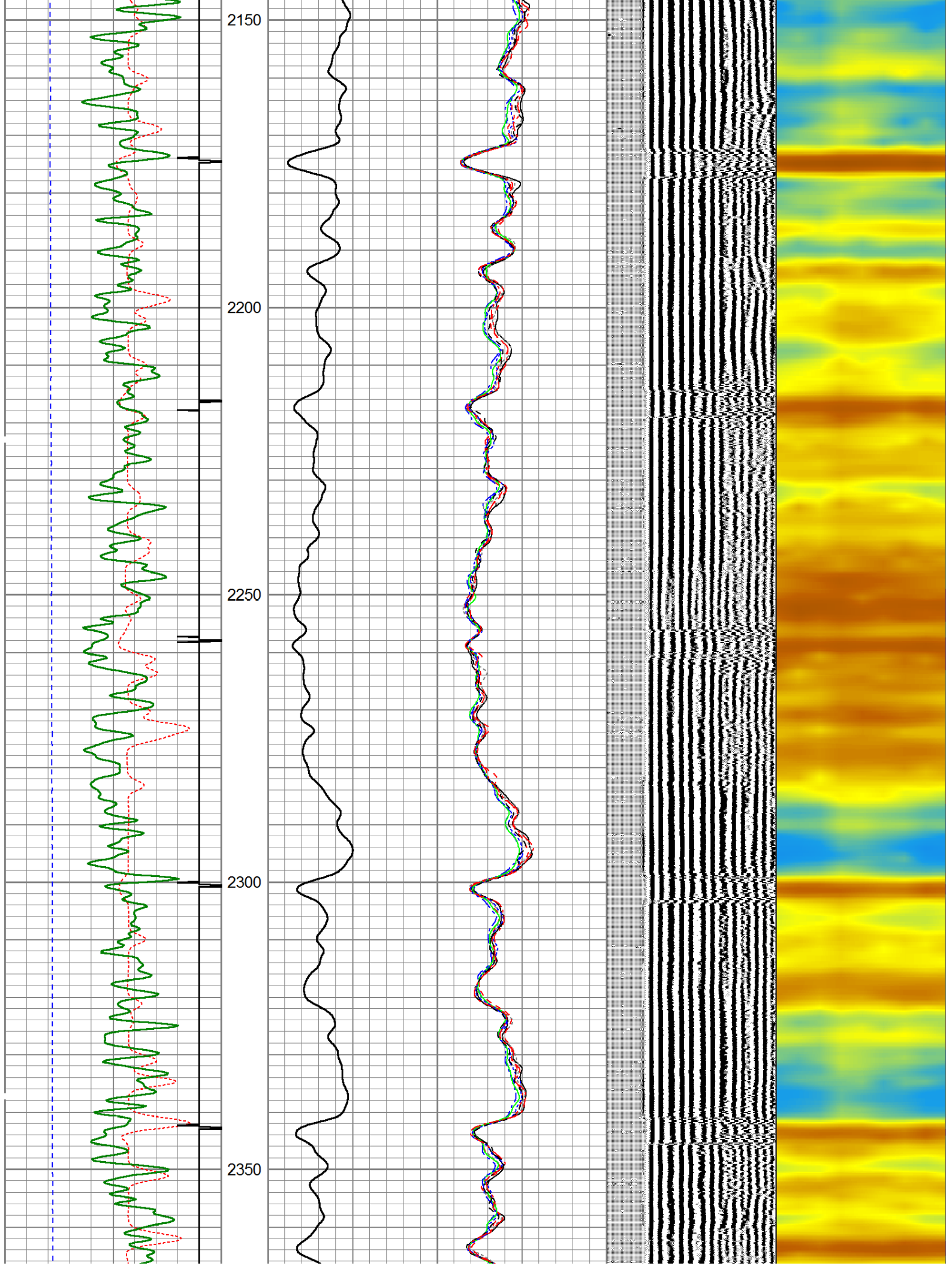


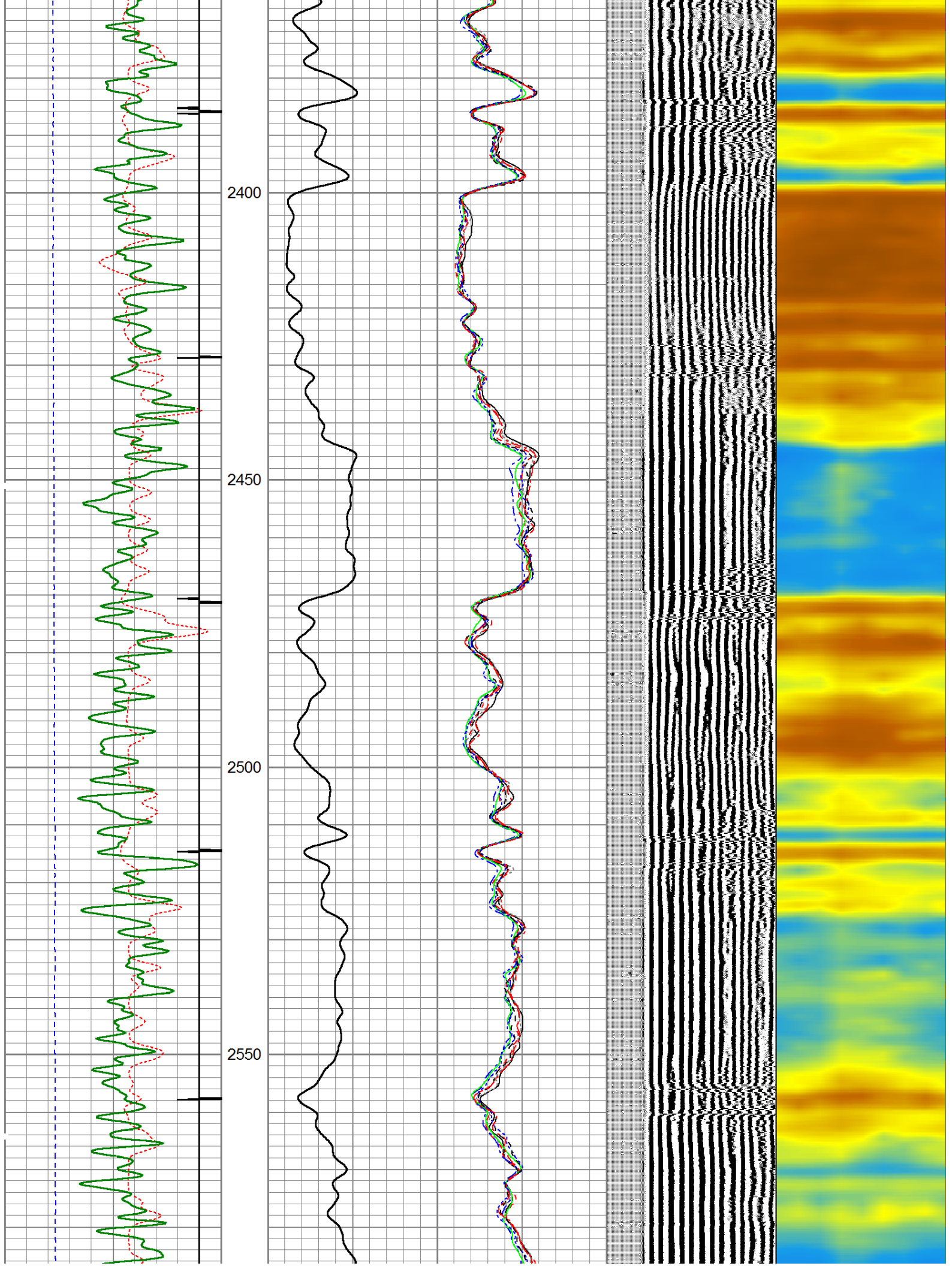


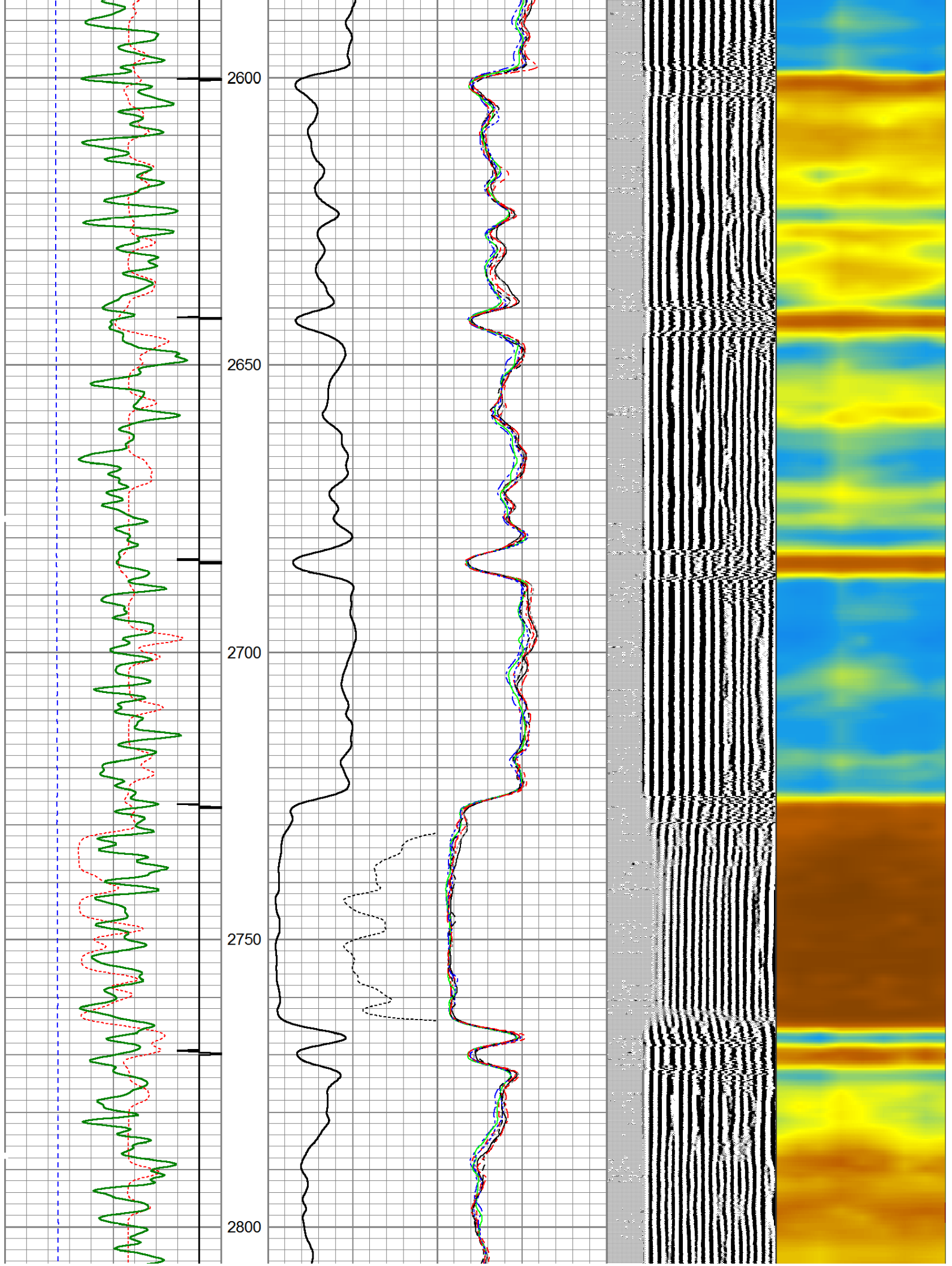


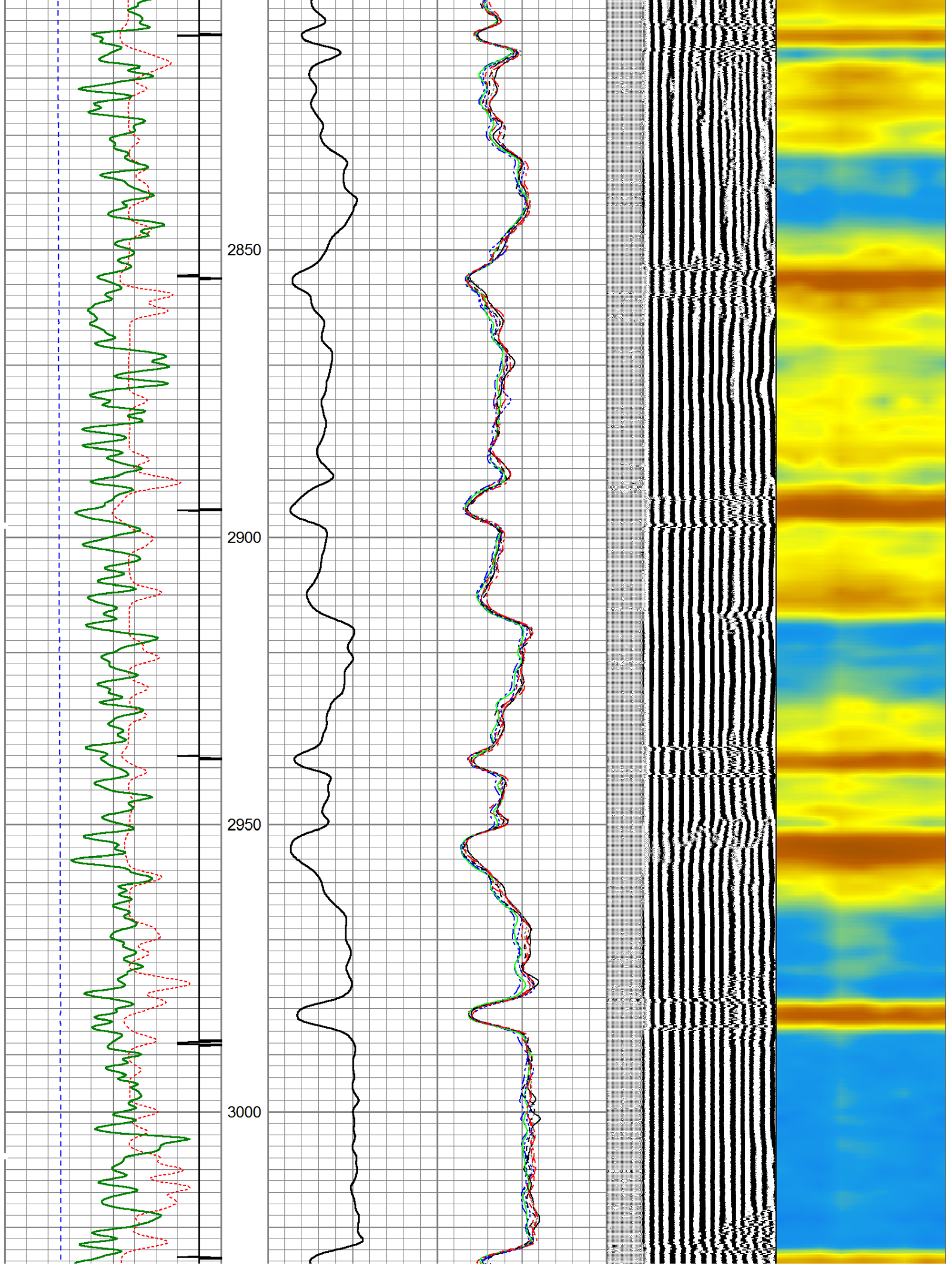


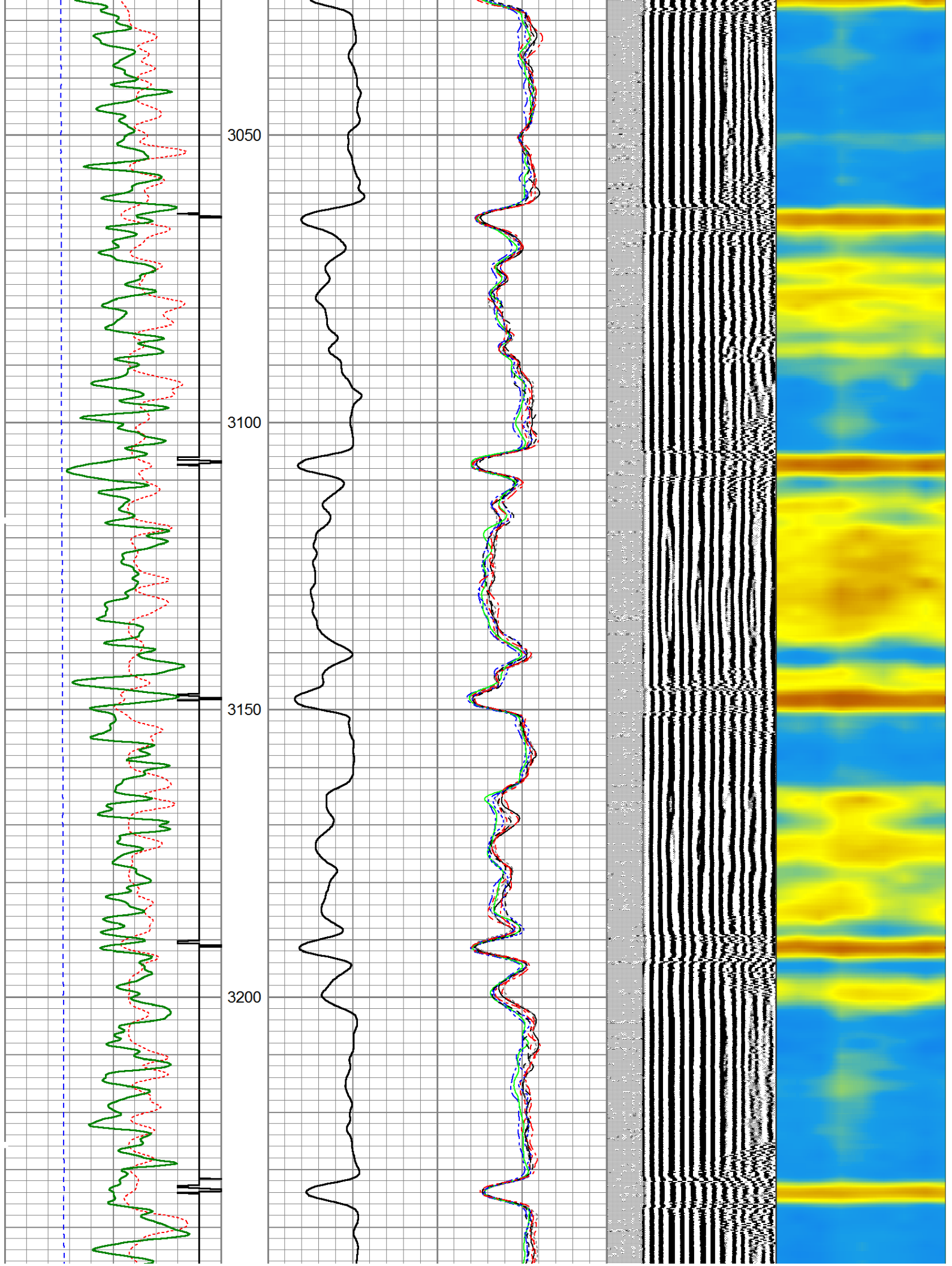


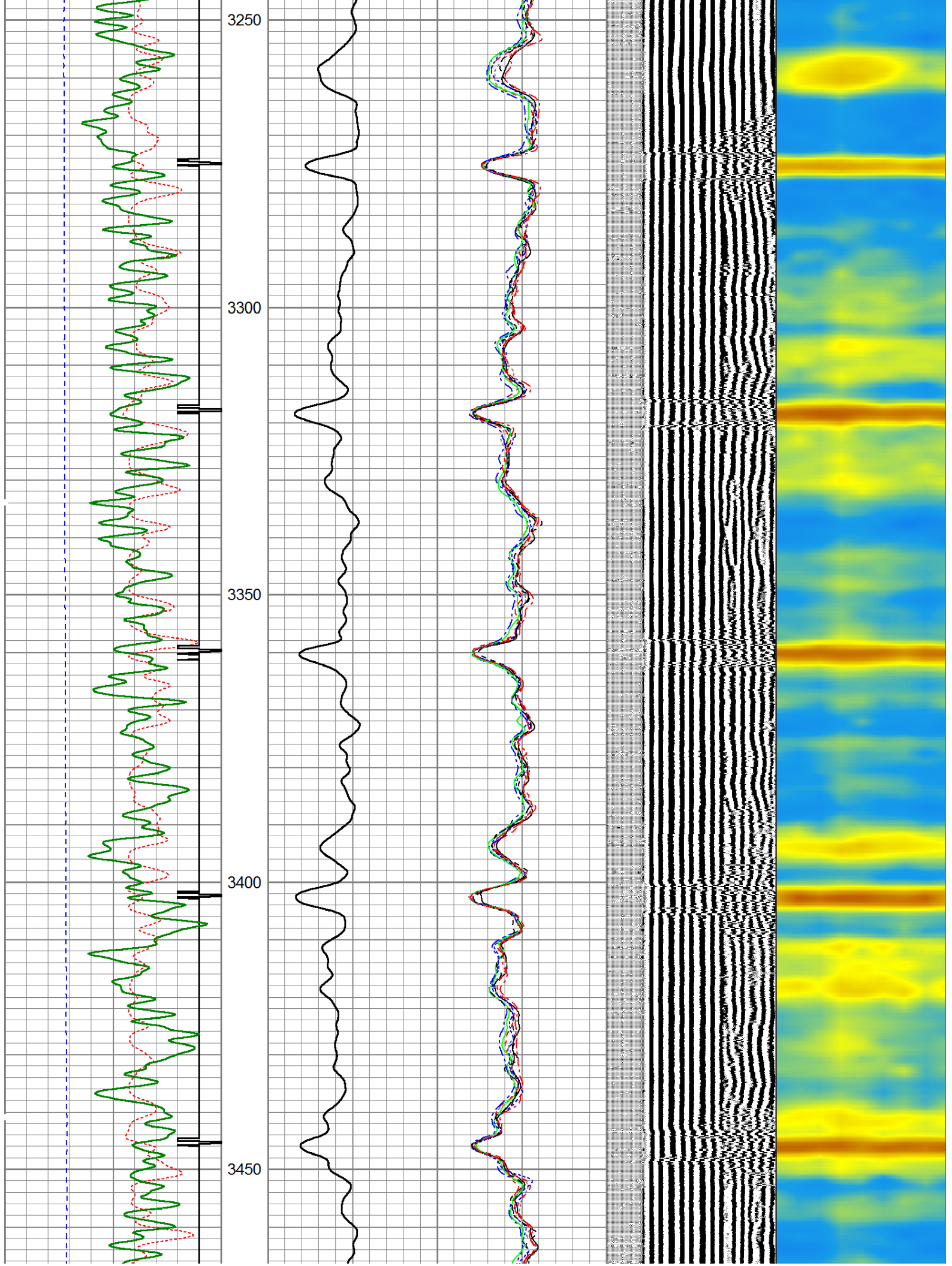


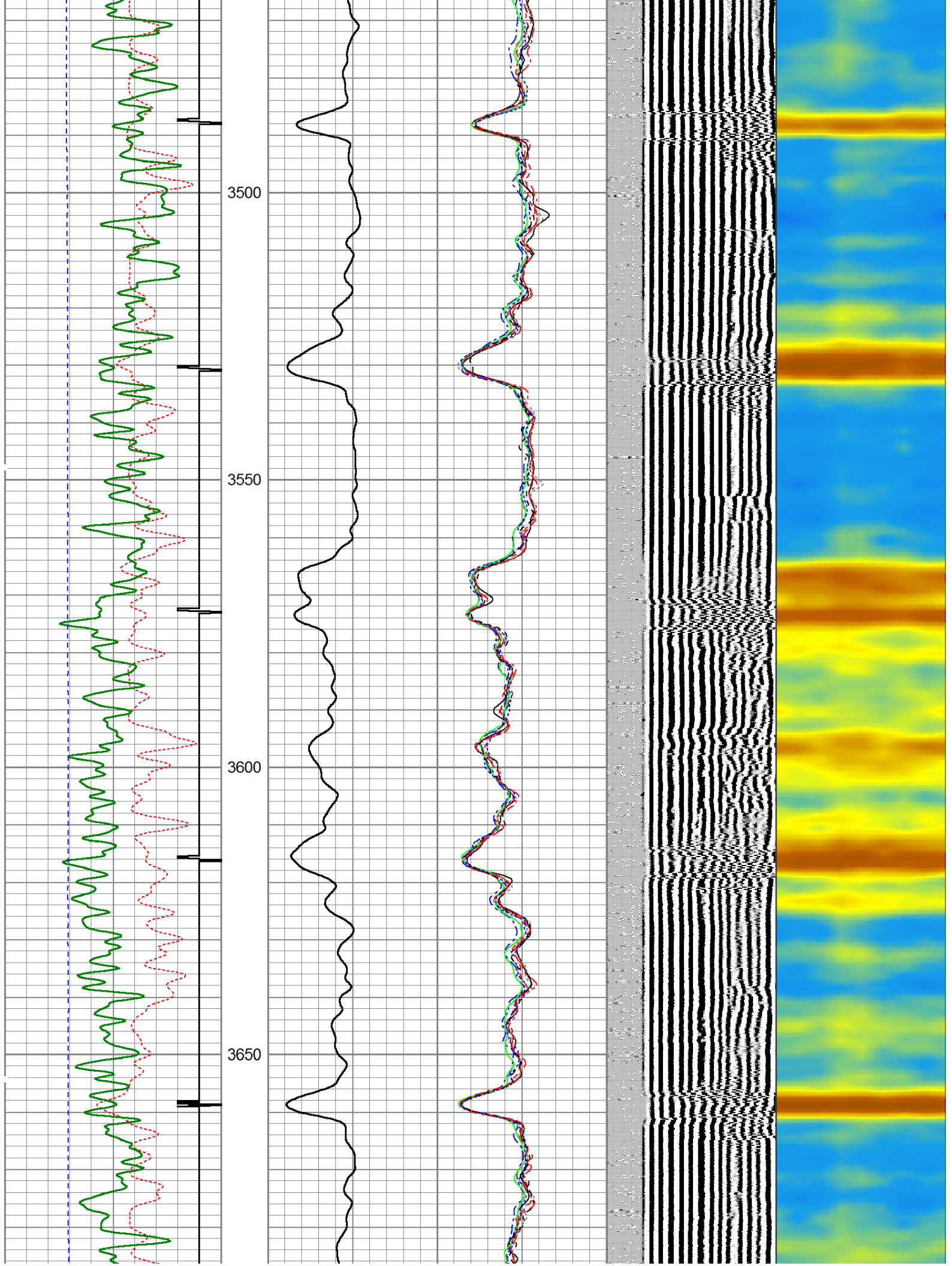


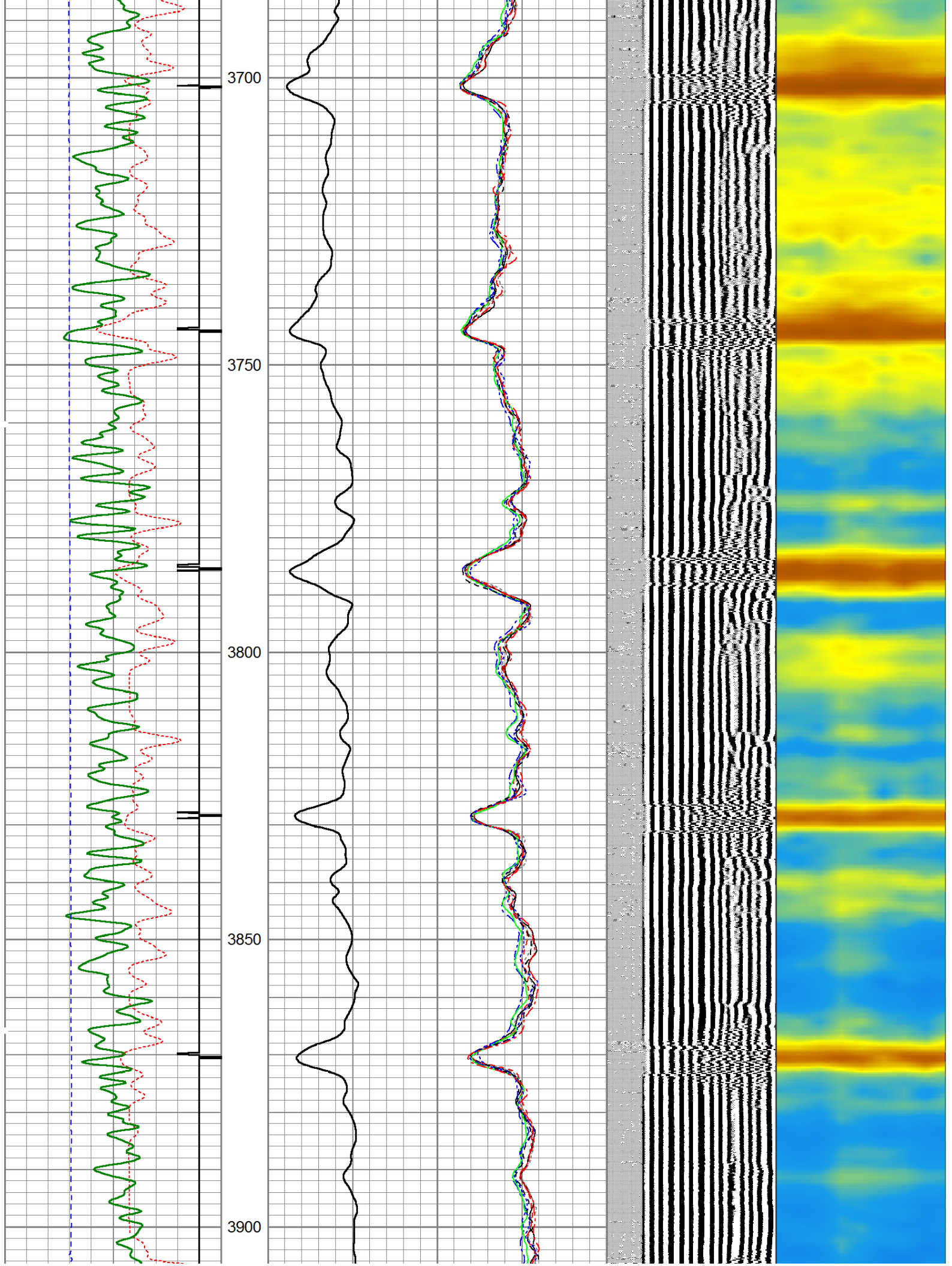


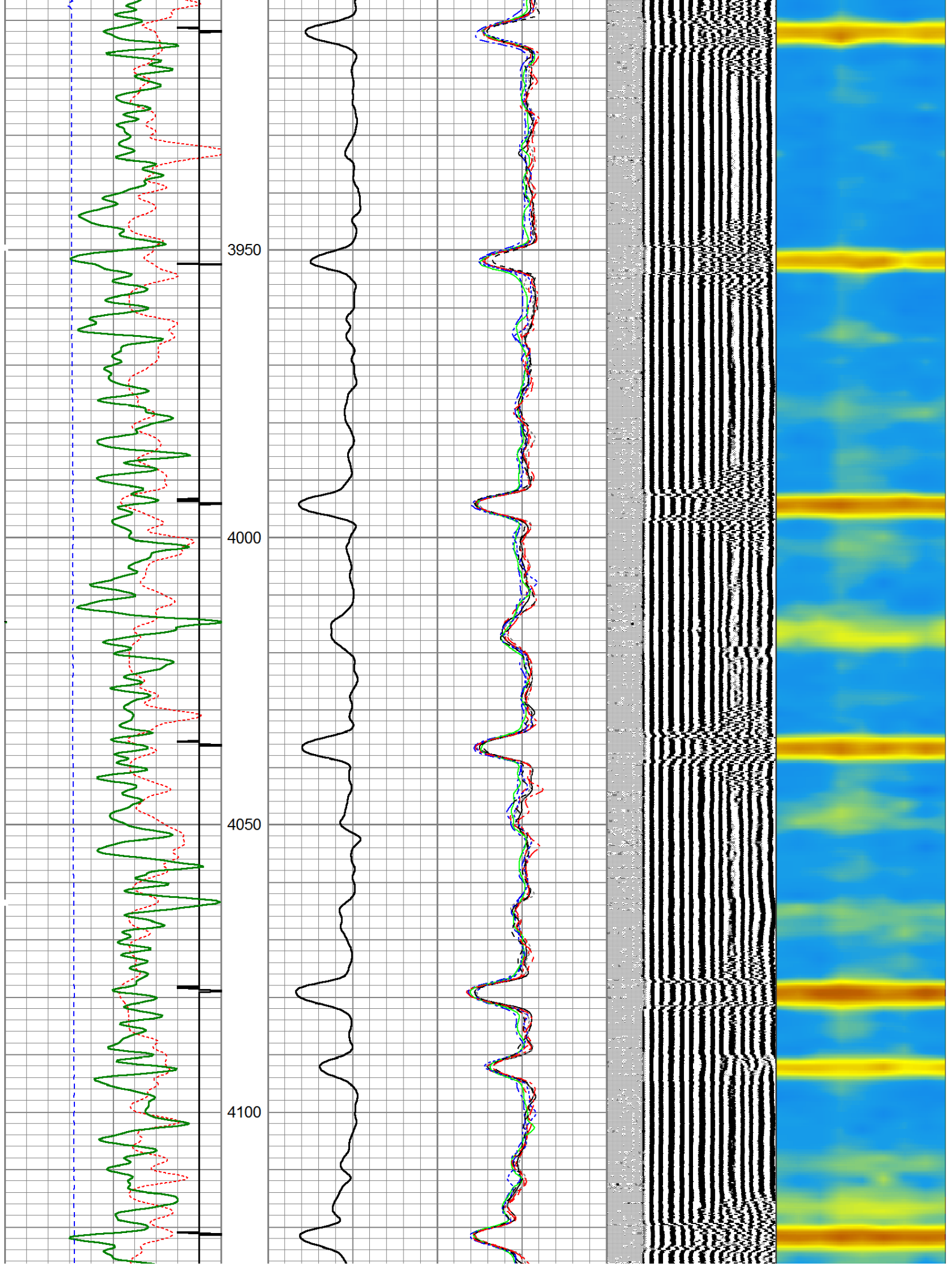


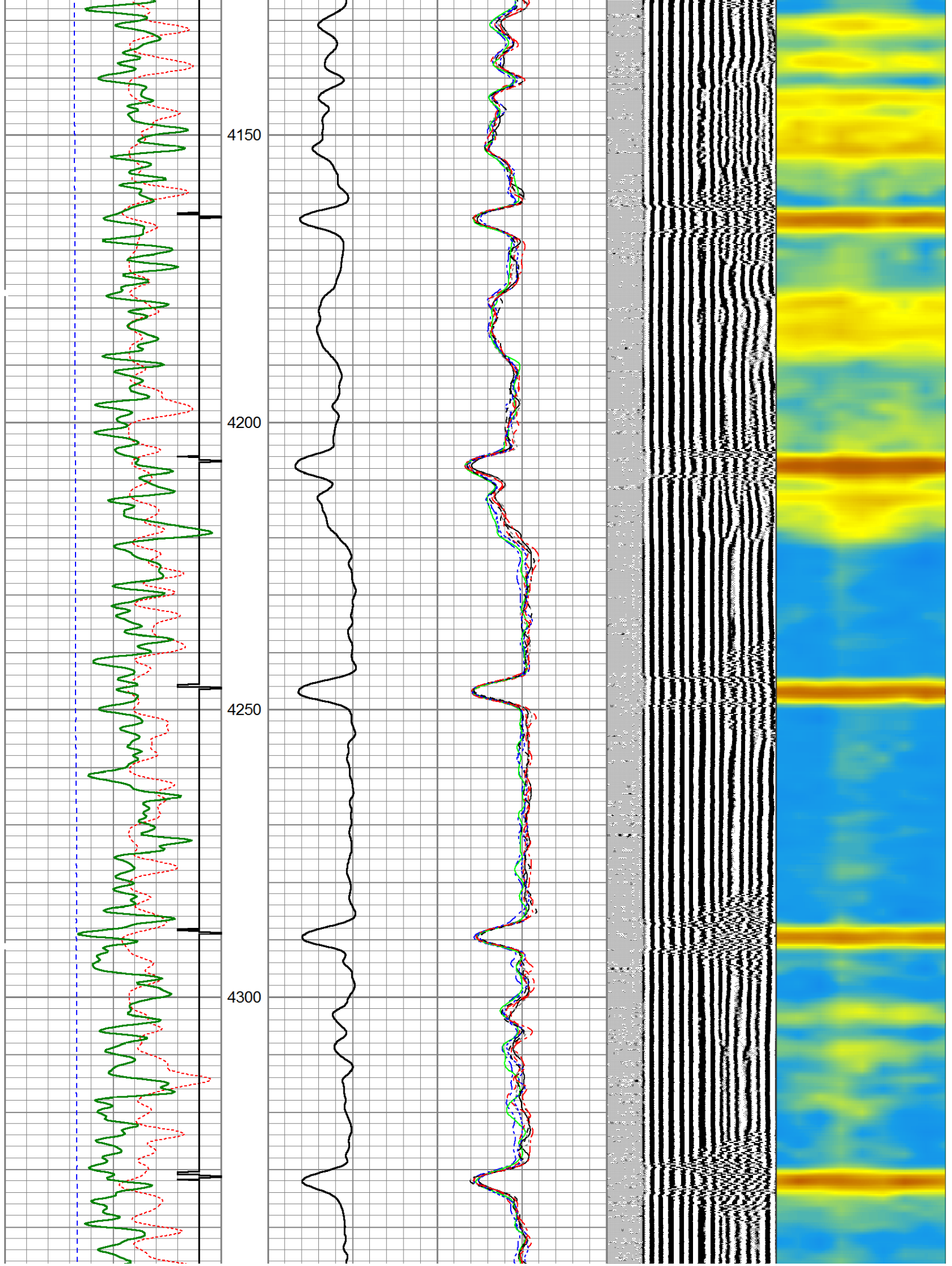


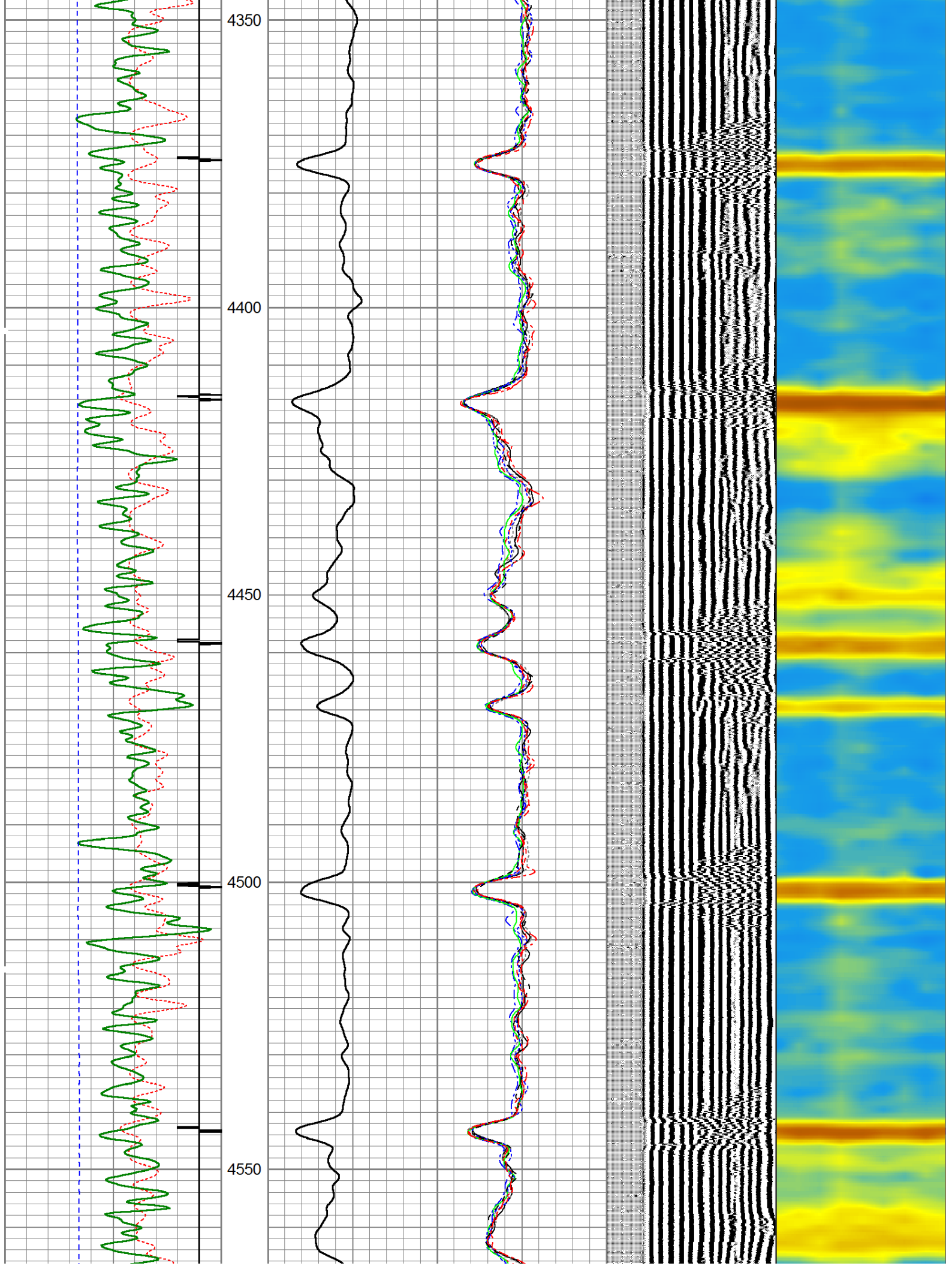


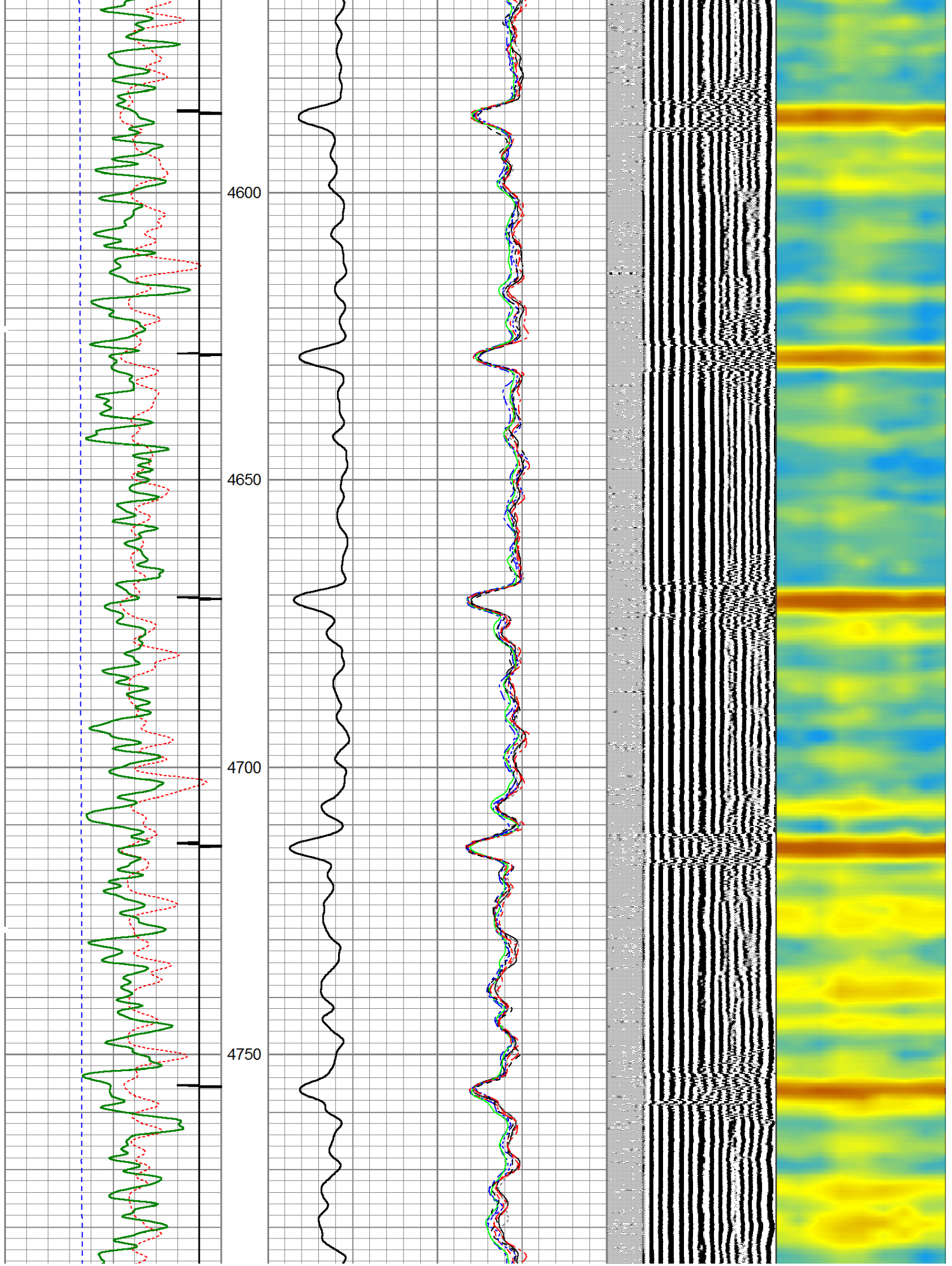


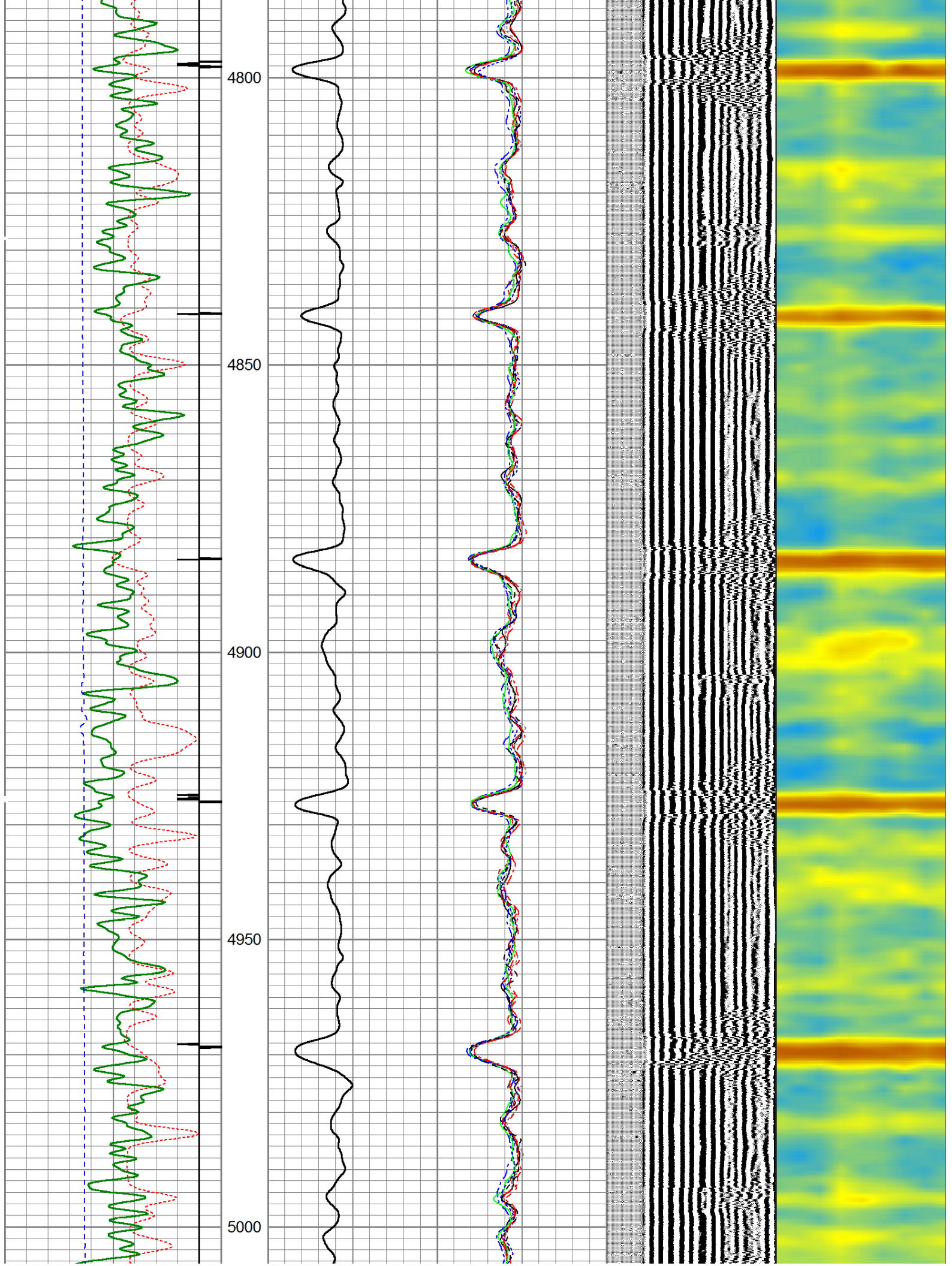


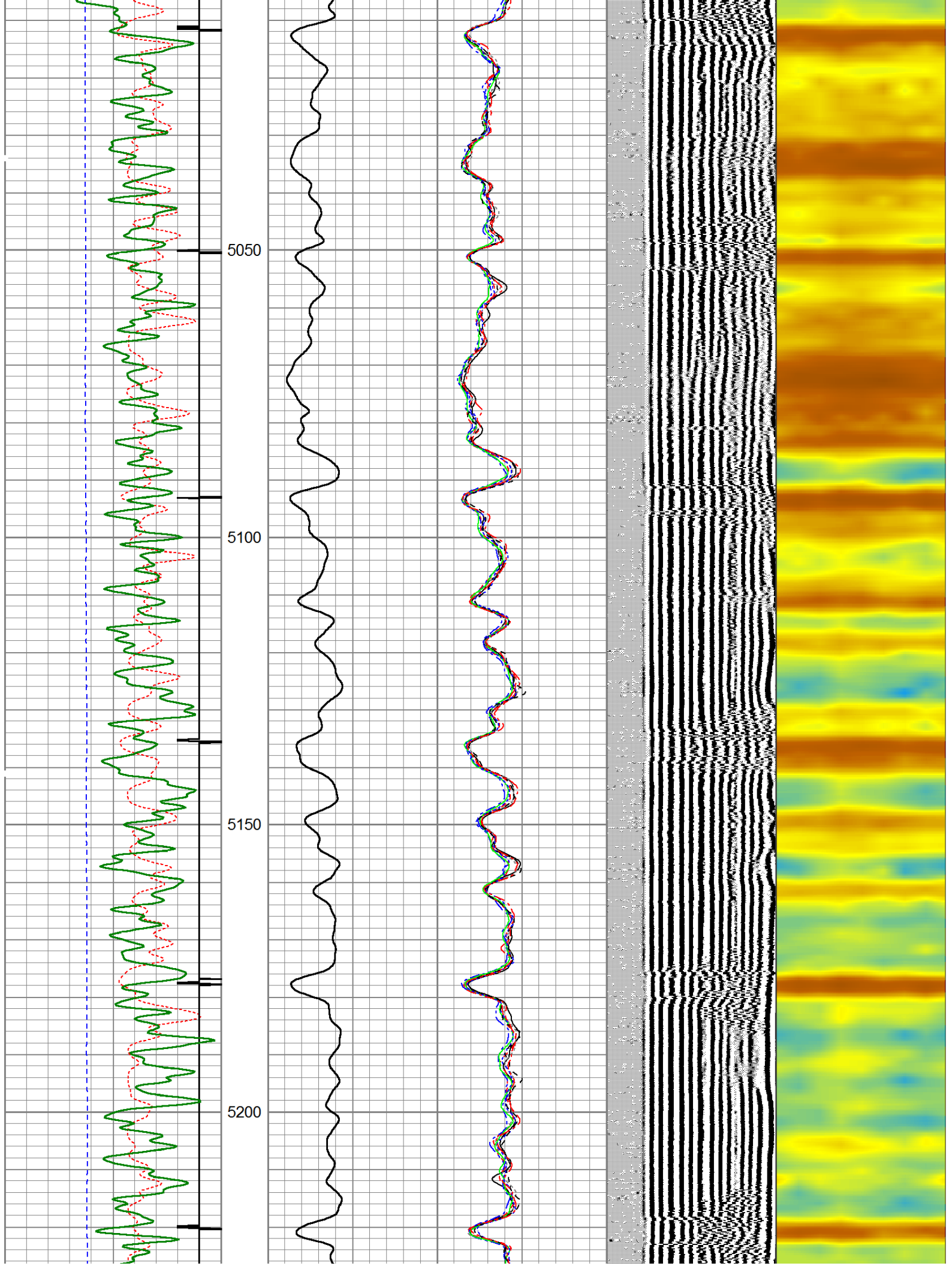


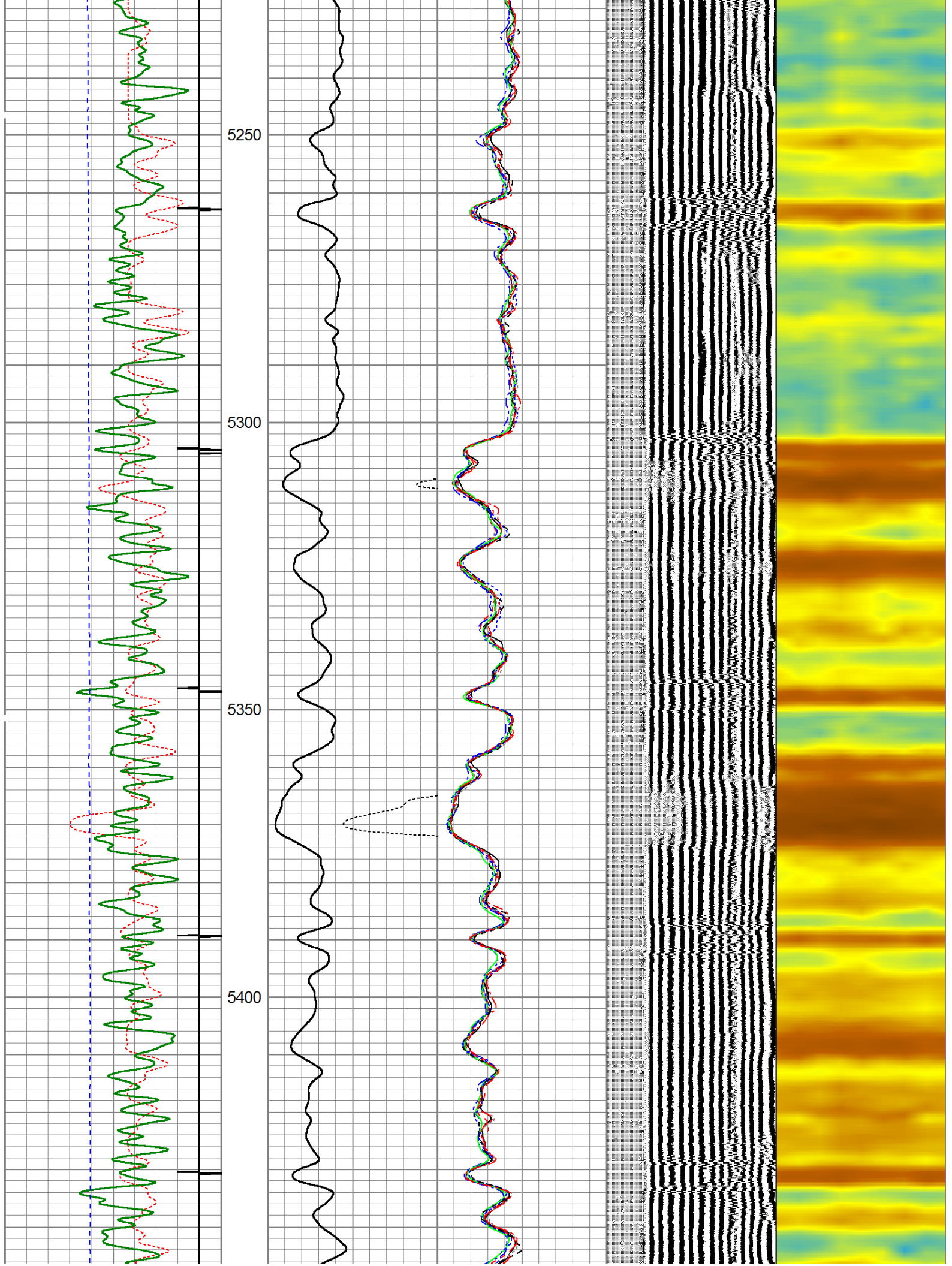


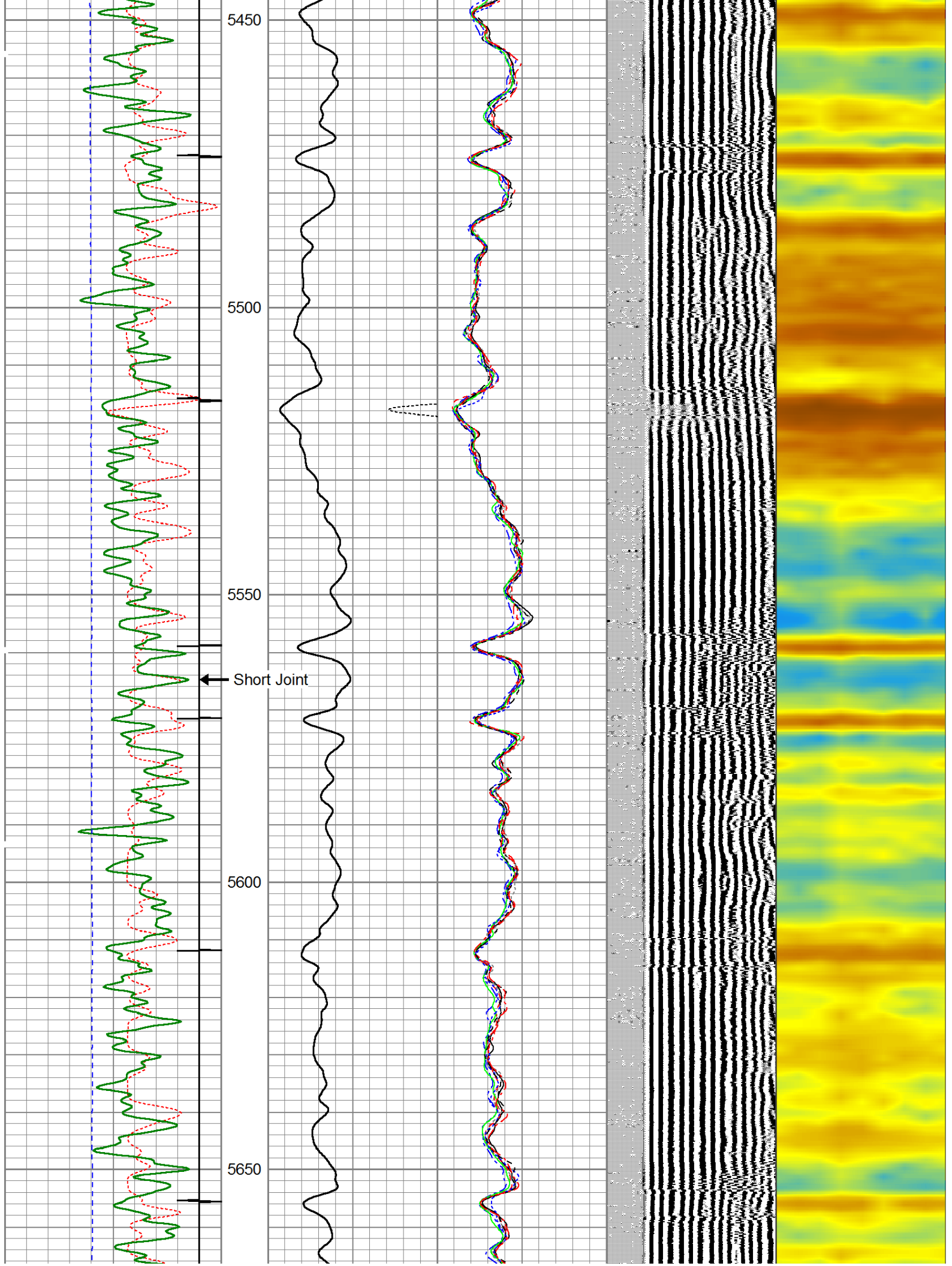


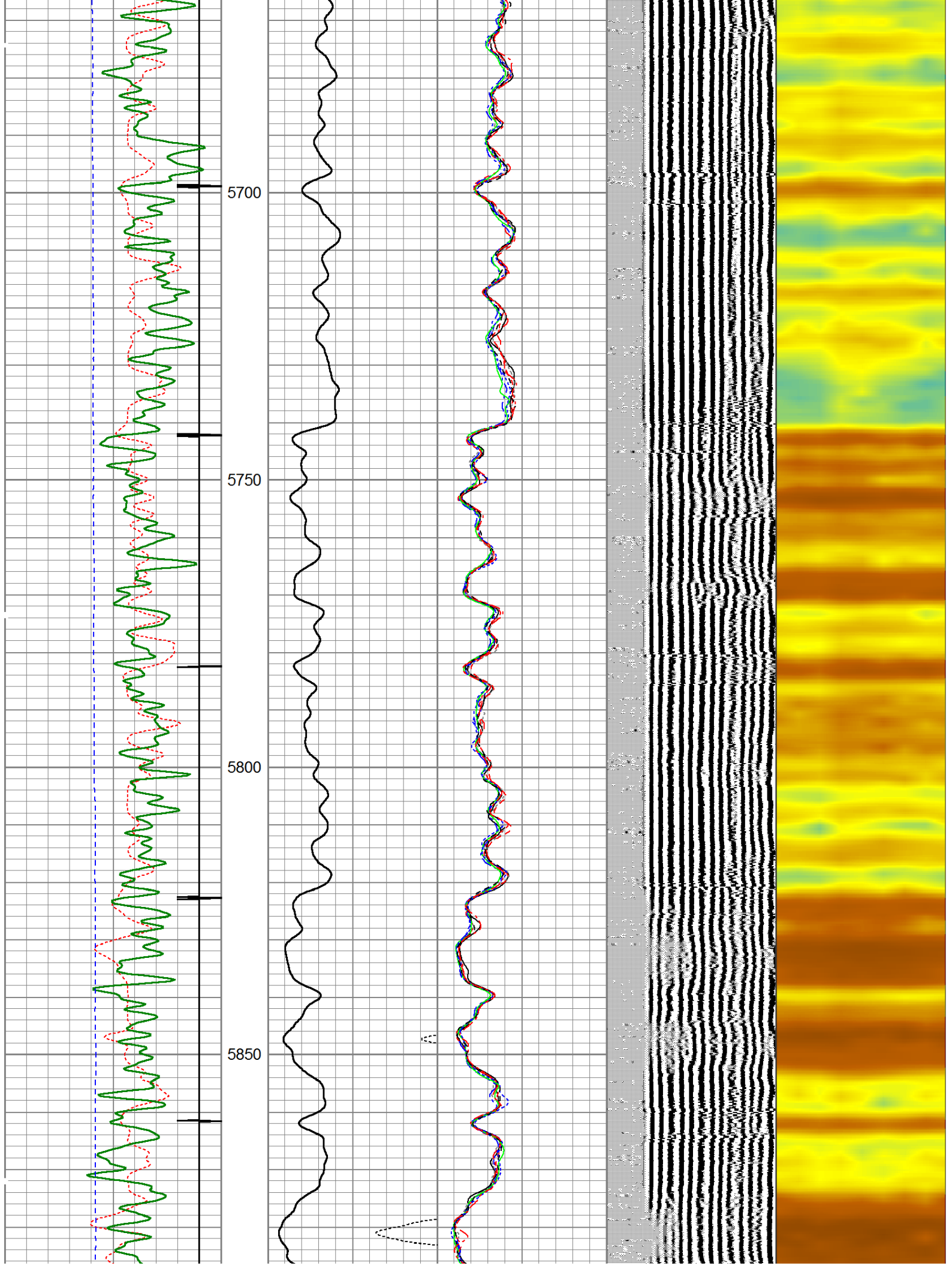


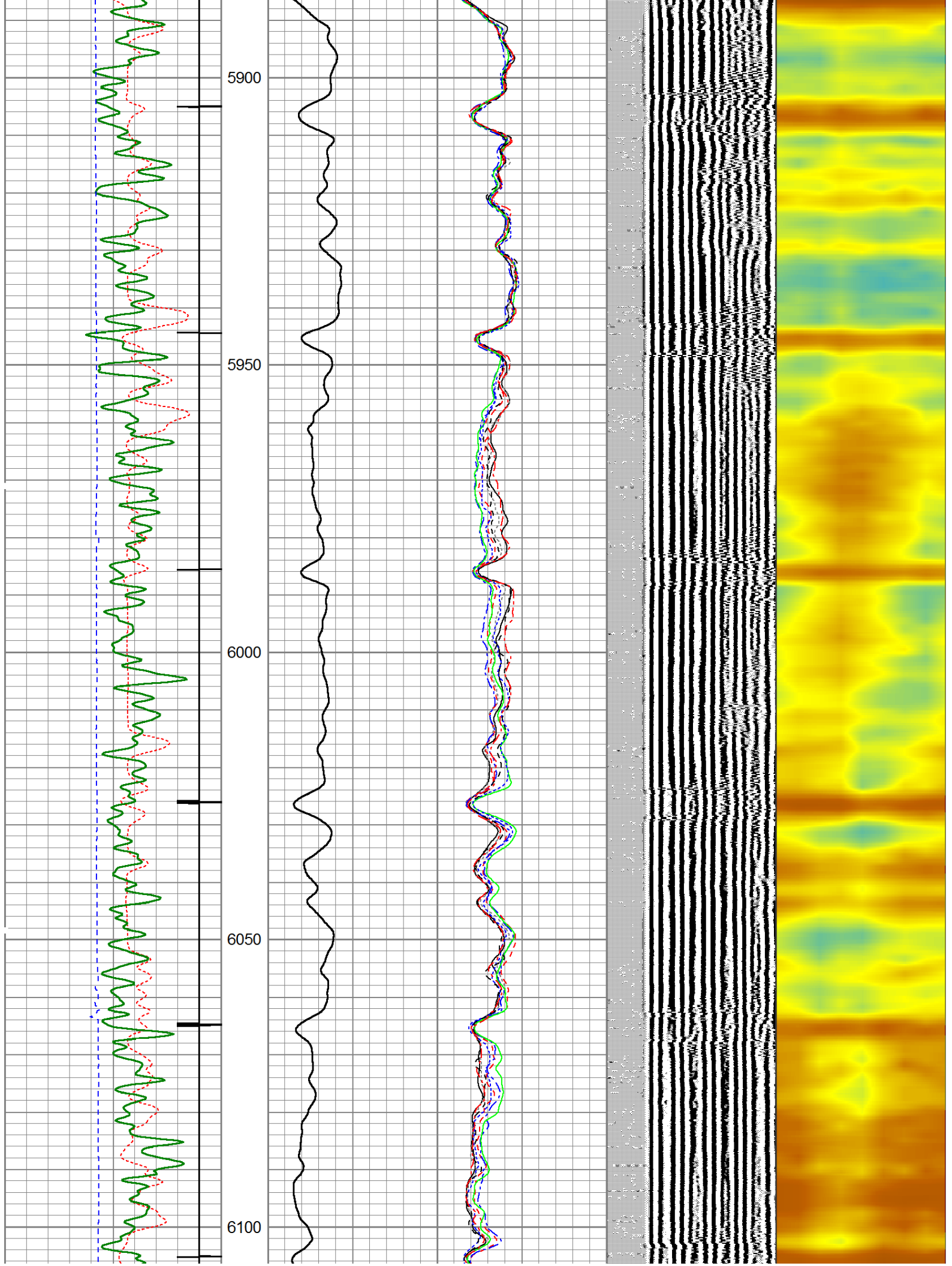


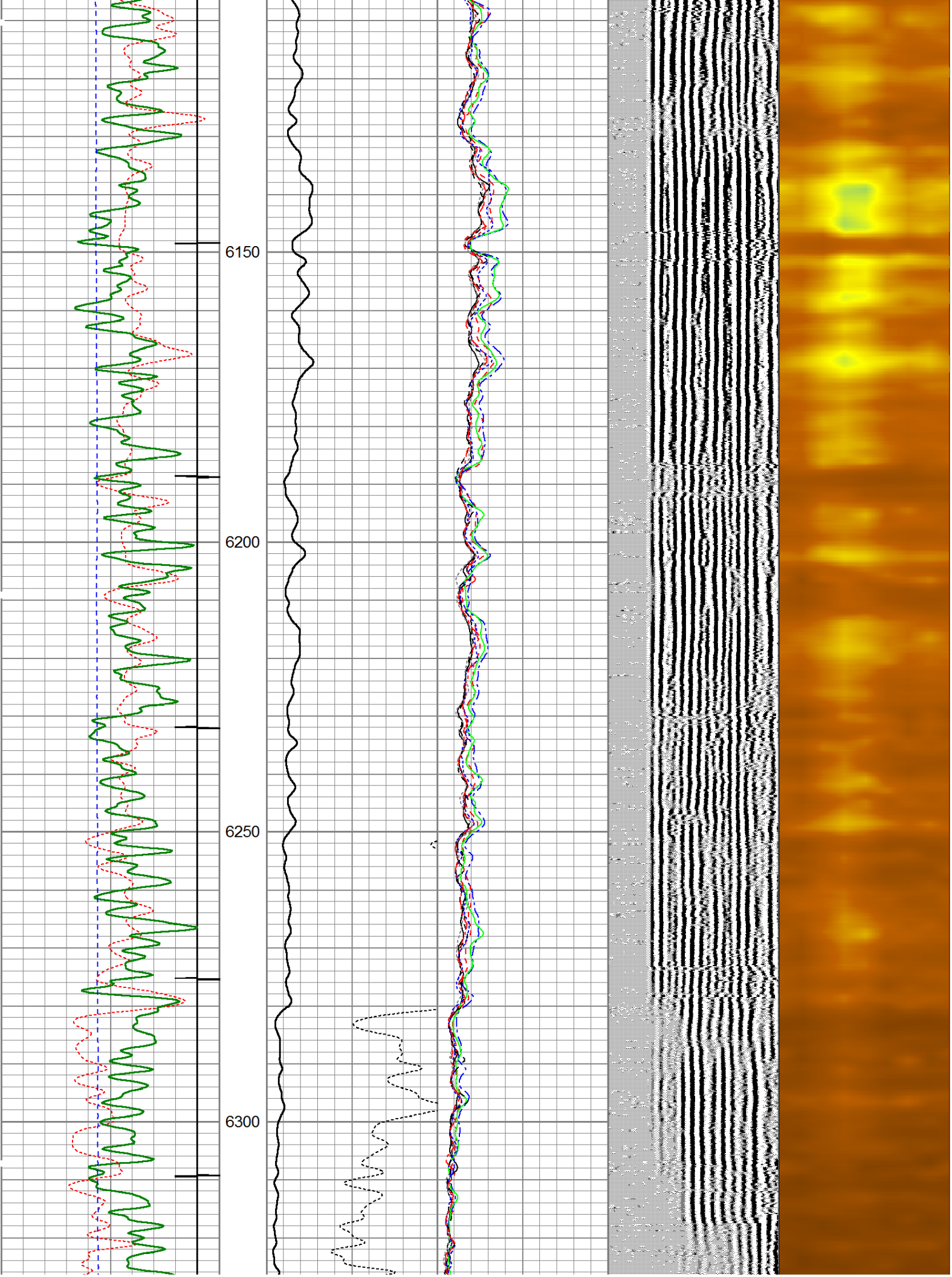


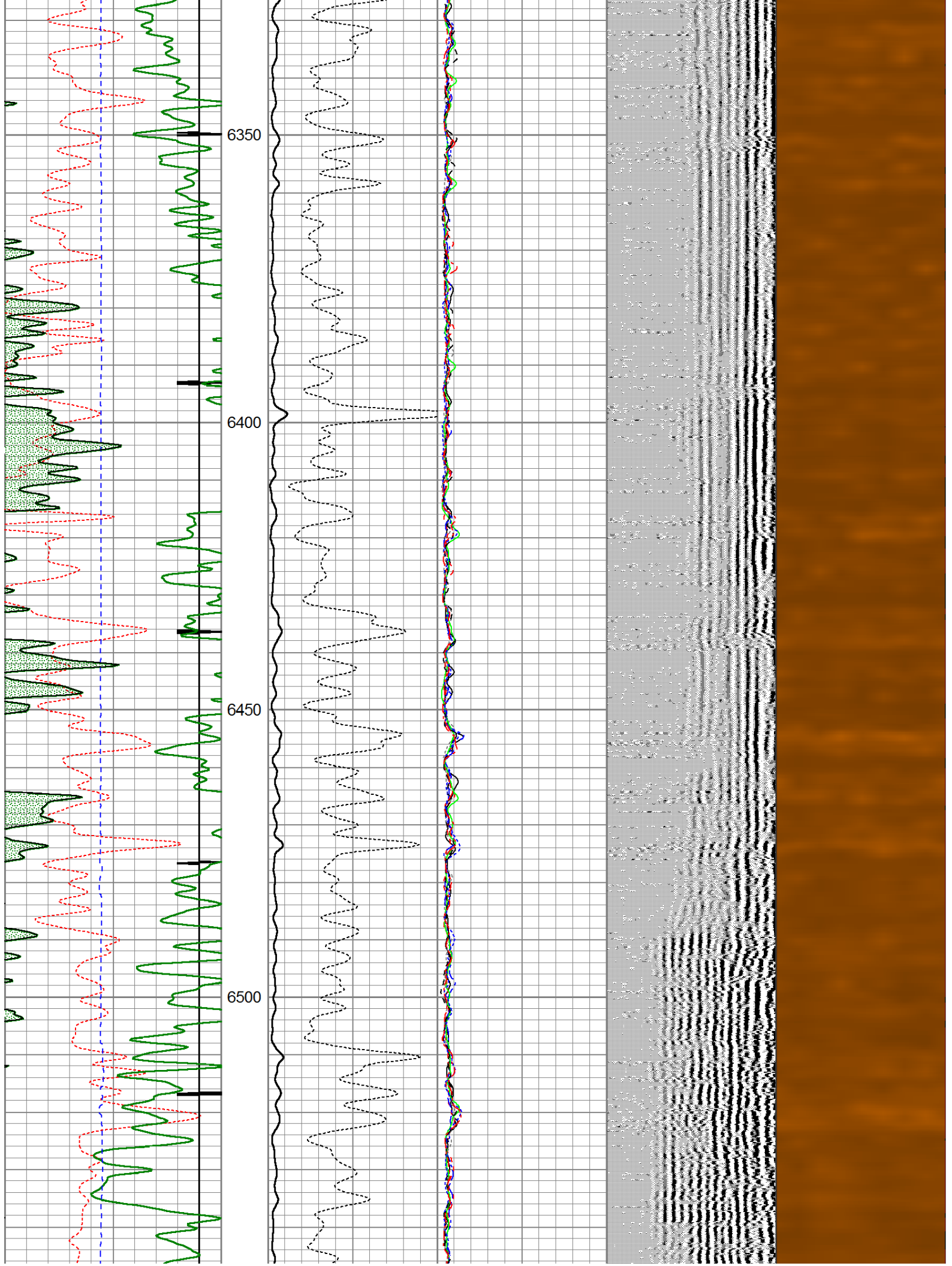


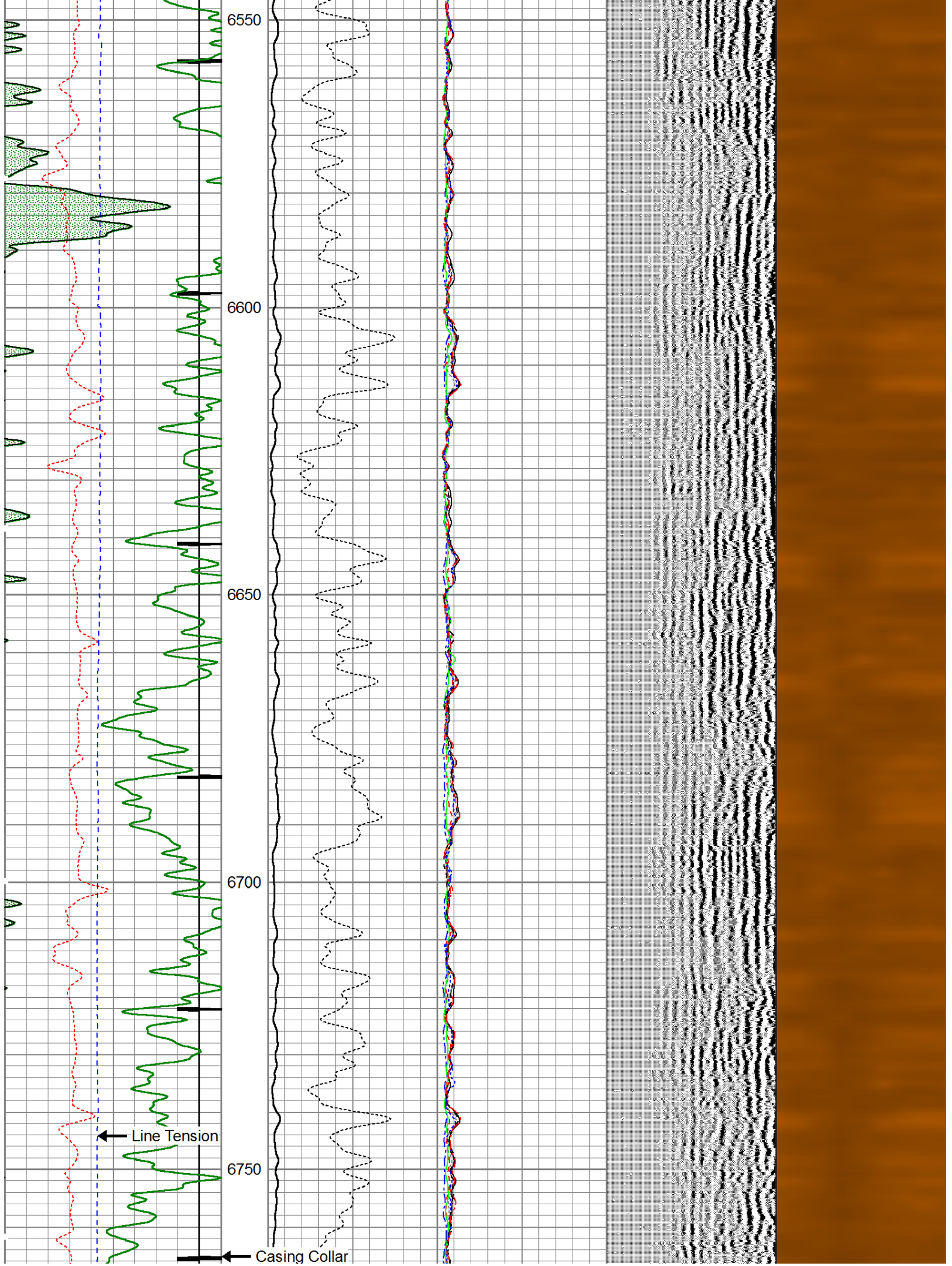


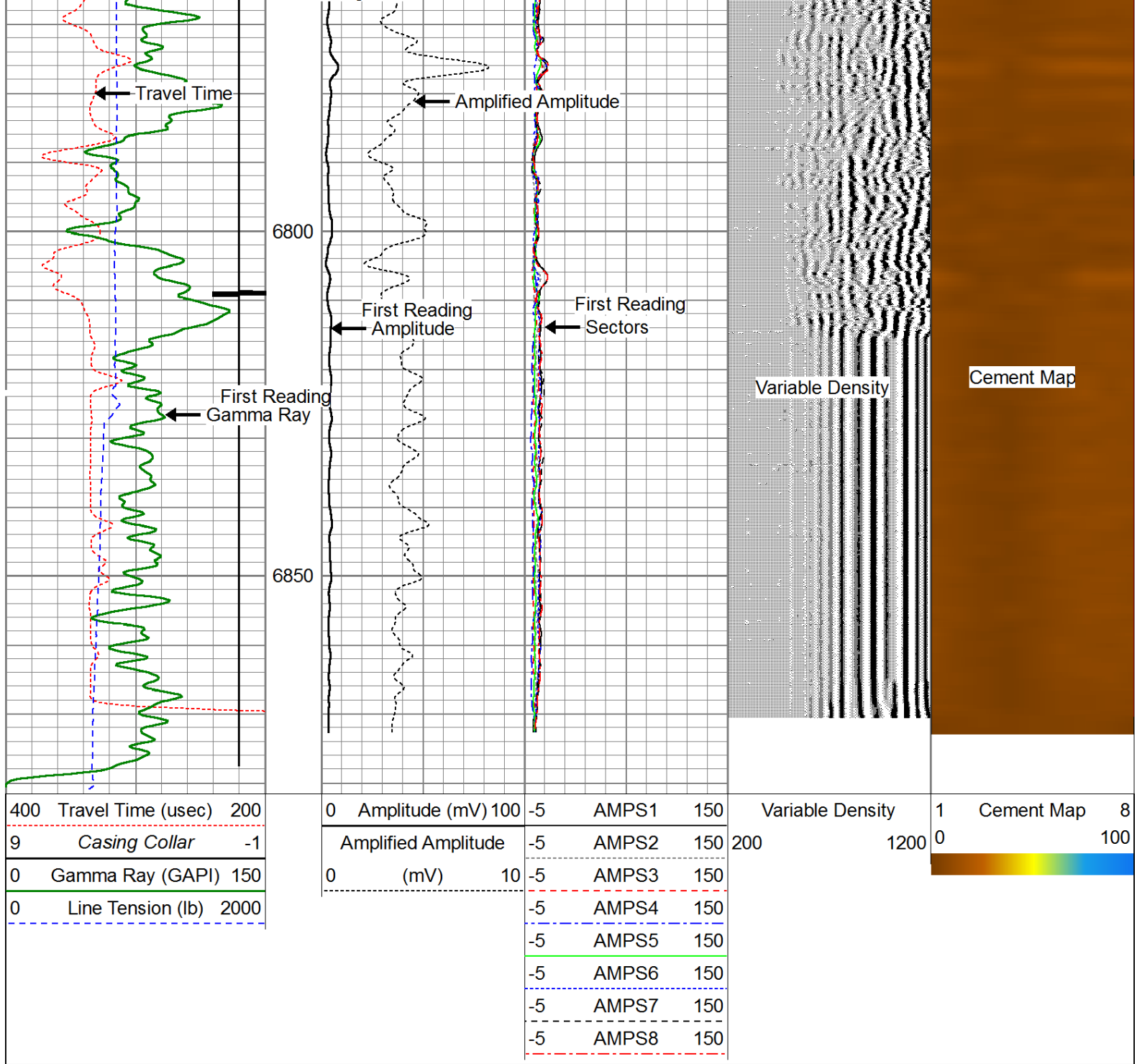






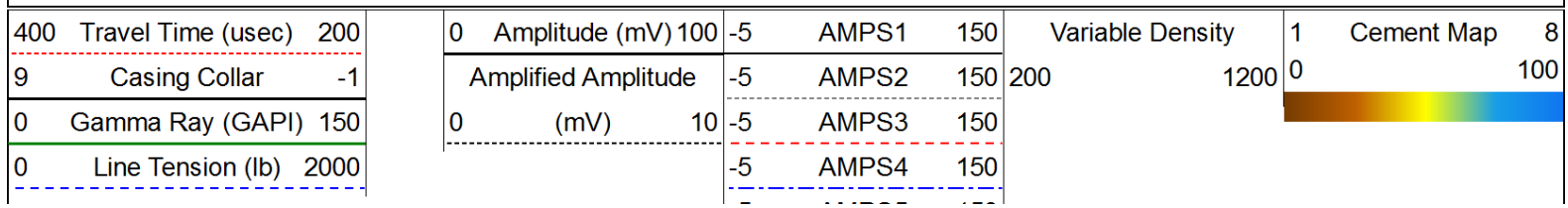




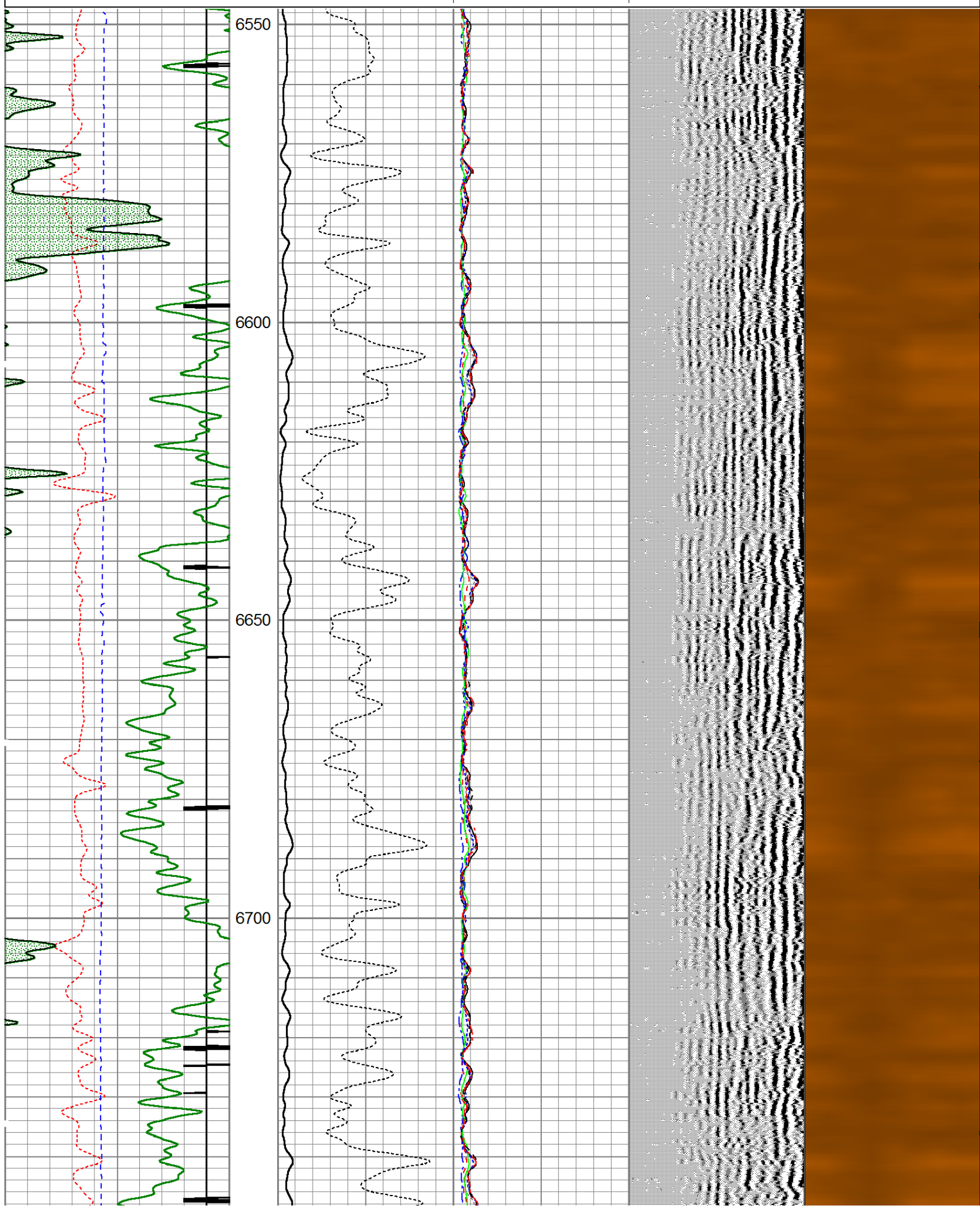


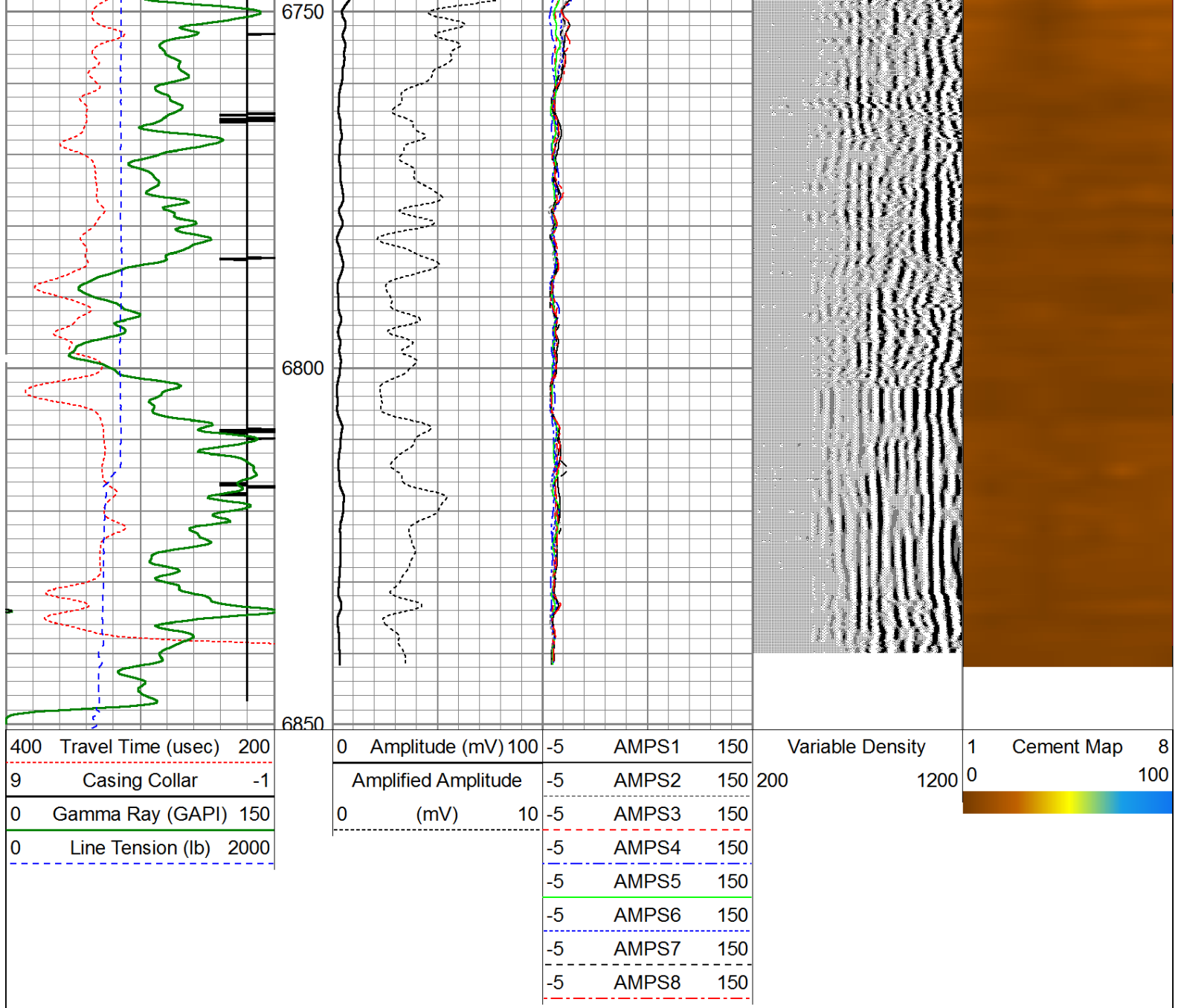
Repeat Pass (0 PSI)

Database File: noble energy wells ranch ae20-64-1hn_rcbl.db
 Dataset Pathname: pass3
 Presentation Format: scbl03
 Dataset Creation: Wed Nov 27 14:01:46 2013 by Log 0
 Charted by: Depth in Feet scaled 1:240



-5	AMPS5	150
-5	AMPS6	150
-5	AMPS7	150
-5	AMPS8	150





Calibration Report		
Database File:	noble energy wells ranch ae20-64-1hn_rcbl.db	
Dataset Pathname:	pass5	
Dataset Creation:	Wed Nov 27 14:08:54 2013 by Log 0	
Gamma Ray Calibration Report		
Serial Number:	110108-Dig	
Tool Model:	Probe275	
Performed:	Wed Nov 20 14:47:41 2013	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.8500	GAPI/cps
Temperature Calibration Report		
Serial Number:	110108-Dig	
Tool Model:	Probe275	
Performed:	Sun Jun 12 12:22:24 2011	

	Reference	Reading
Low Reference:	0.00 degF	0.00 cps
High Reference:	1.00 degF	1.00 cps
Gain:	1.00	
Offset:	0.00	
Delta Spacing	2	

Segmented Cement Bond Log Calibration Report

Serial Number: 111107
 Tool Model: Probe
 Calibration Casing Diameter: 7.000 in
 Calibration Depth: 621.188 ft

Master Calibration, performed Wed Nov 27 15:14:36 2013:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.026	0.618	1.000	62.165	86.580	3.497
CAL	-0.030	0.913				
5'	-0.019	0.514	1.000	62.165	114.794	3.152
SUM						
S1	-0.012	0.646	0.000	100.000	152.050	1.839
S2	-0.016	0.696	0.000	100.000	140.406	2.307
S3	-0.022	0.709	0.000	100.000	136.738	2.993
S4	-0.020	0.687	0.000	100.000	131.351	2.866
S5	-0.021	0.625	0.000	100.000	148.700	3.246
S6	-0.021	0.566	0.000	100.000	170.276	3.590
S7	-0.022	0.520	0.000	100.000	184.521	4.036
S8	-0.021	0.534	0.000	100.000	180.258	3.743

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.030	0.913	1.000	0.000

Air Zero Calibration, performed Thu Oct 17 08:50:08 2013:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	
5'	0.000		0.000		0.000	
SUM						
S1	0.000		0.000		0.000	
S2	0.000		0.000		0.000	
S3	0.000		0.000		0.000	
S4	0.000		0.000		0.000	
S5	0.000		0.000		0.000	
S6	0.000		0.000		0.000	
S7	0.000		0.000		0.000	
S8	0.000		0.000		0.000	

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
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